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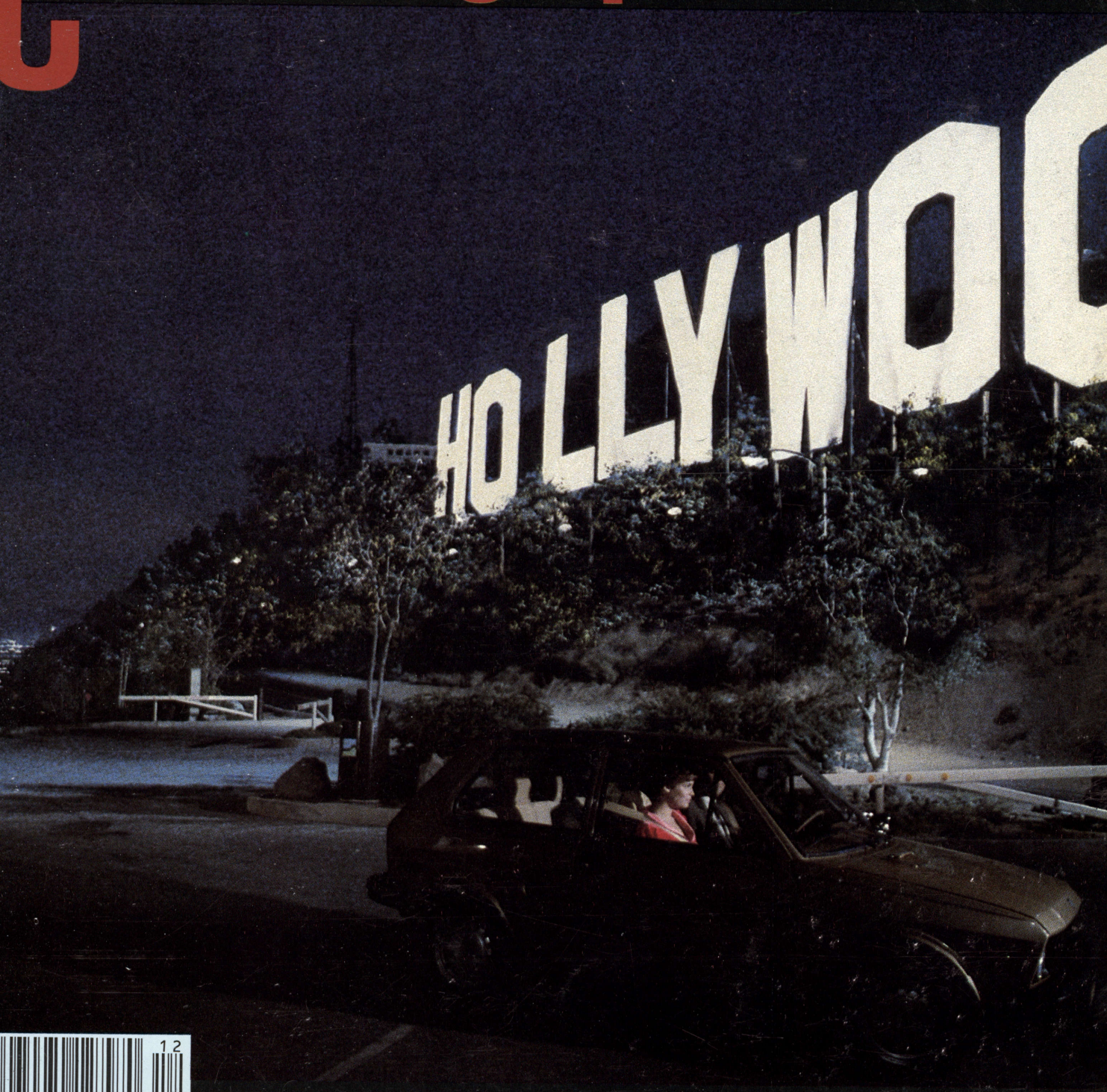

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1933 Spectacular – *Deluge*

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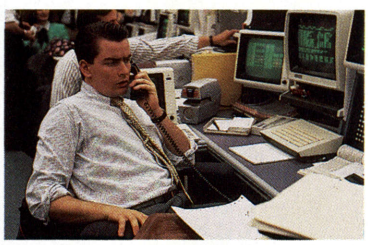

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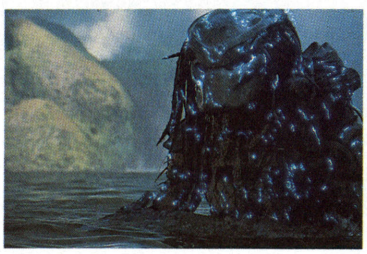

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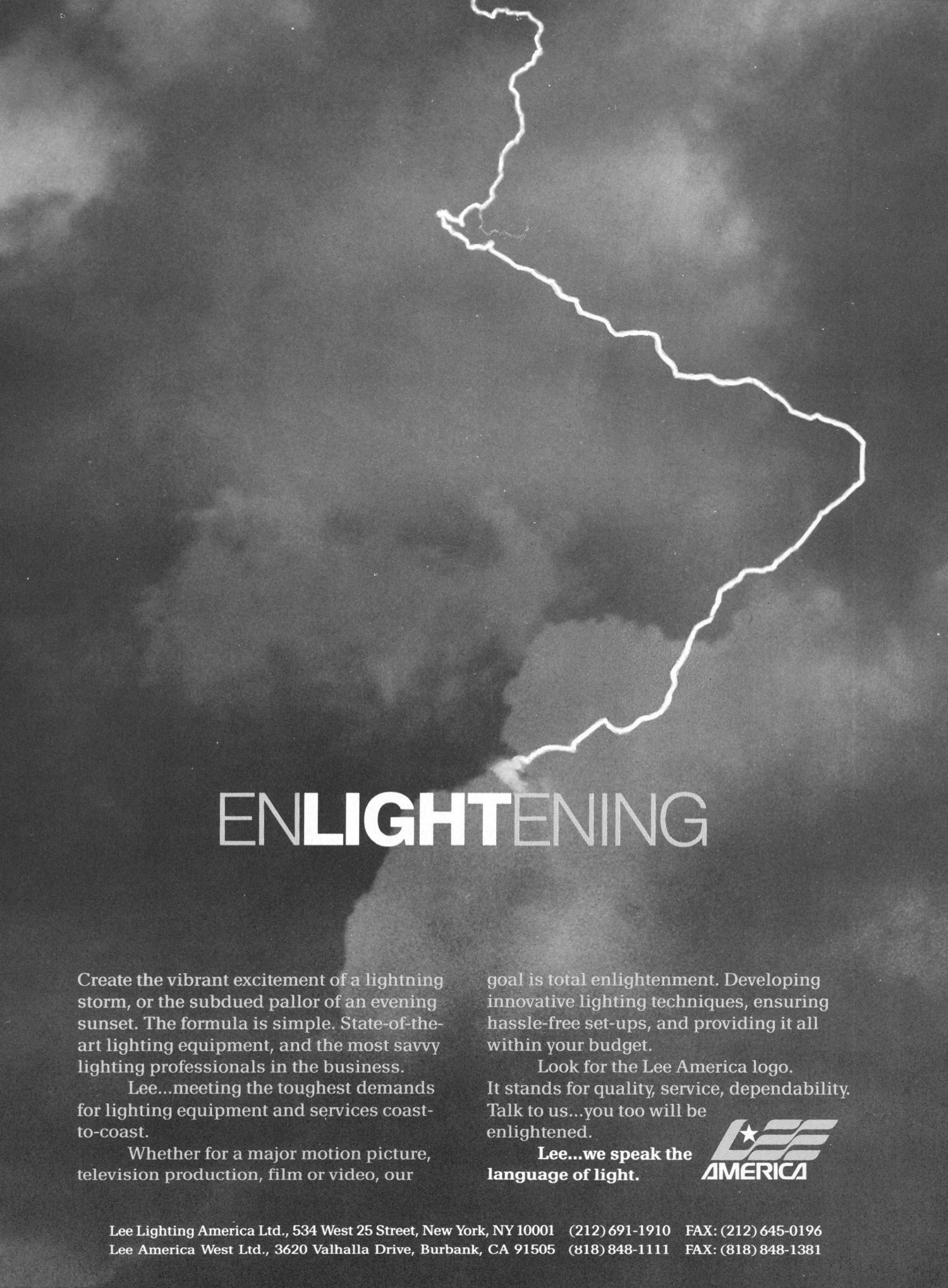

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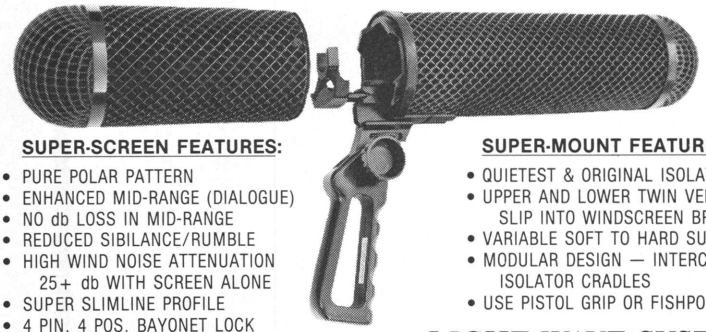

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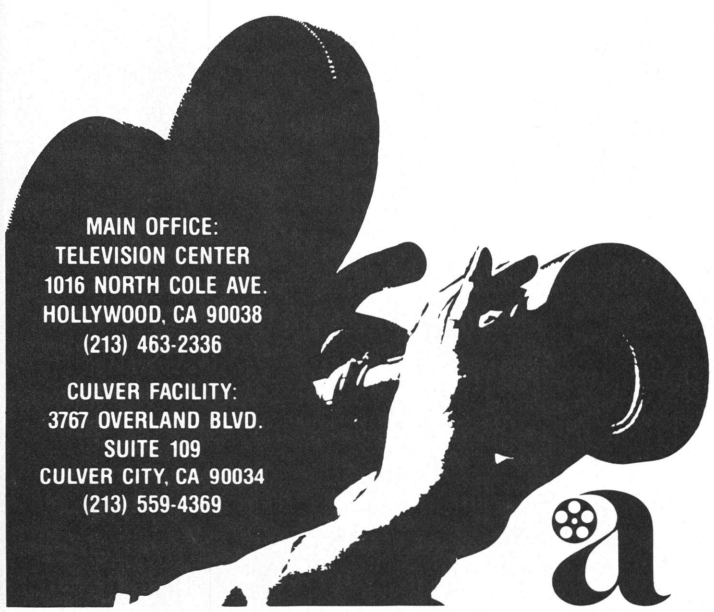

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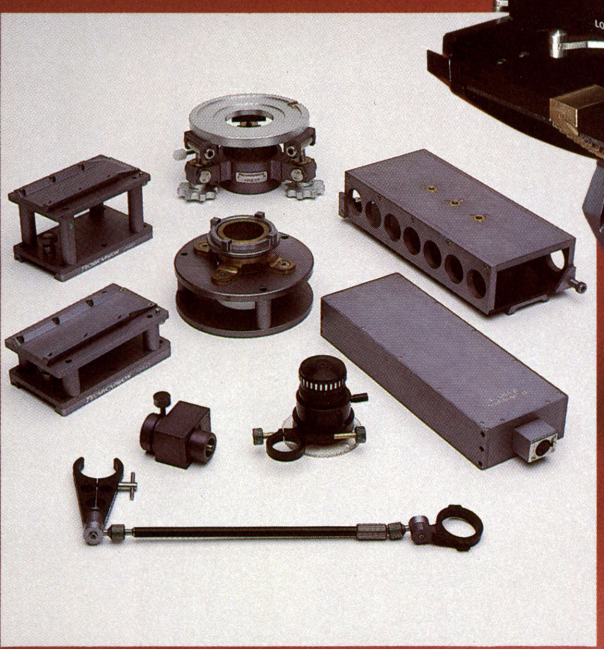

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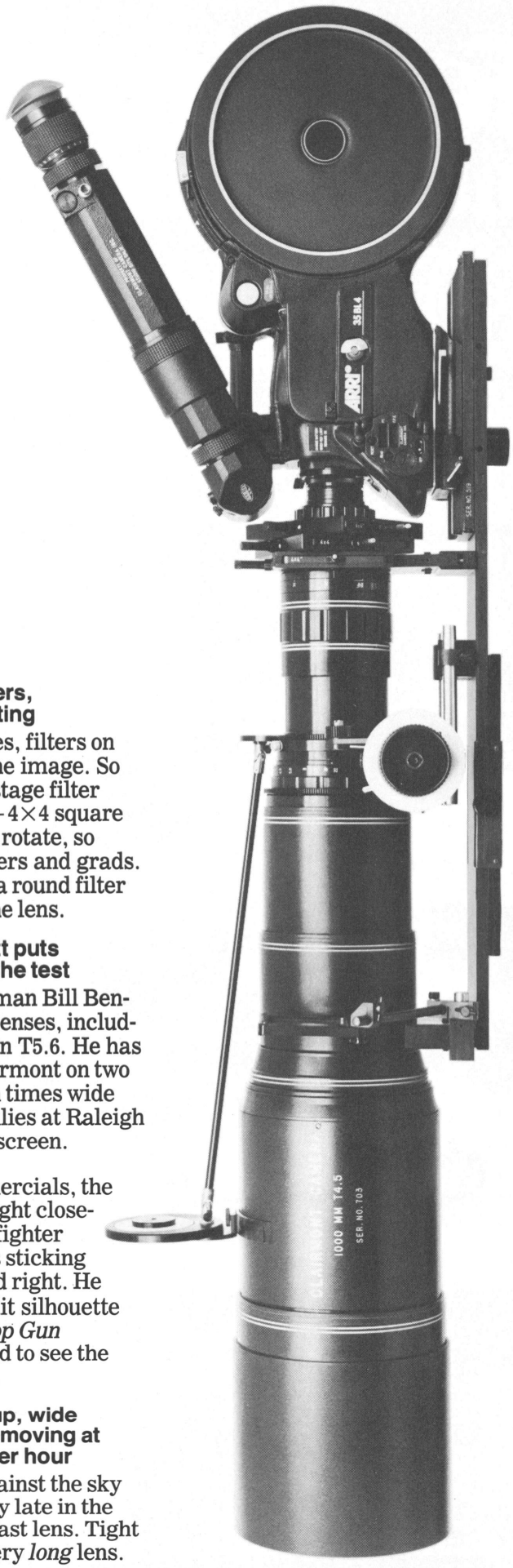

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Bill Bennett puts our lens to the test

Hollywood cameraman Bill Bennett owns eighteen lenses, including an 800mm Canon T5.6. He has used a 1000mm Clairmont on two commercials—both times wide open. He ran his dailies at Raleigh Studios on a 14 foot screen.

On one of the commercials, the director wanted a tight close-up of a military jet fighter taking off. Wingtips sticking out of frame left and right. He also wanted a backlit silhouette against the sky—*Top Gun* style. And he wanted to see the jet's exhaust flame.

Tight closeup, wide open, subject moving at 150 miles per hour

To see the flame against the sky meant shooting very late in the day. That meant a fast lens. Tight framing meant a very *long* lens.

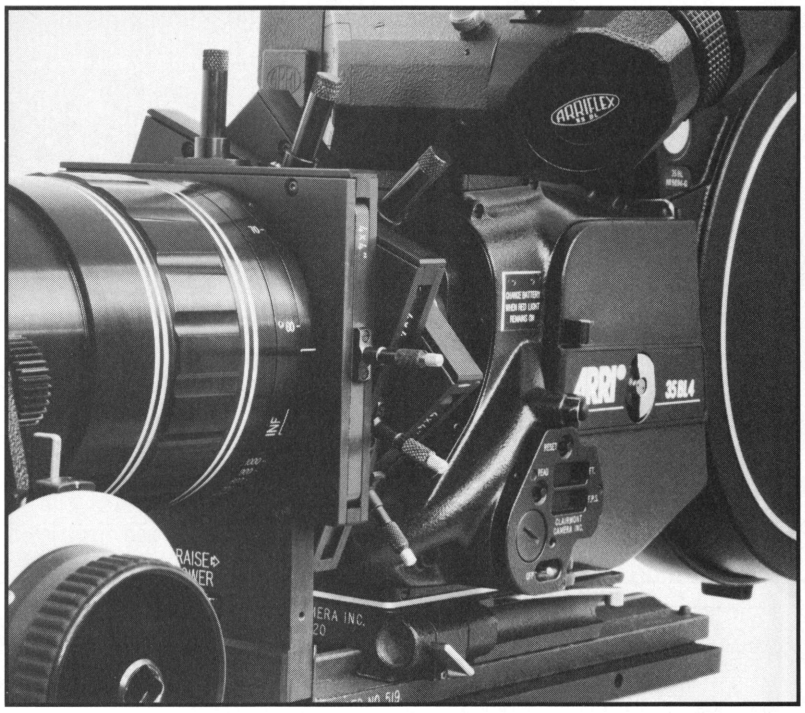
Backlighting meant shooting into the sunset sky, probably wide open. The fading light meant not many retakes. The plane would be moving past and away at 150 mph. *No problem.*

"We disguised part of Mojave Airport as a military base and we set up as close to the runway as we were allowed to get," says Bill Bennett. "With the light going, we knew we'd get only a few shots at the takeoff. So I had two cameras rolling."

800mm as backup on second camera

"As a backup, I had my 800mm Canon set up on the other side of the runway, shooting the same (but opposite) angle. Three-quarter rear view of the jet fighter taking off against the blue hills and banking steeply out of frame against the orange sky."

"When the plane entered frame, it was about 700 feet away, going away from us. With the 1000mm, the frame was a little under 15 feet wide at 700 feet. The plane's wingspan was 22 feet. Just right."



Rotating filter stage at *back* of Clairmont lens

"To fill the frame with the 800mm, we would have had to pick the plane up sooner and pan with it. *You* try that—with an 800mm lens wide open and an airplane going by at 220 feet per second!"

Fast follow focus

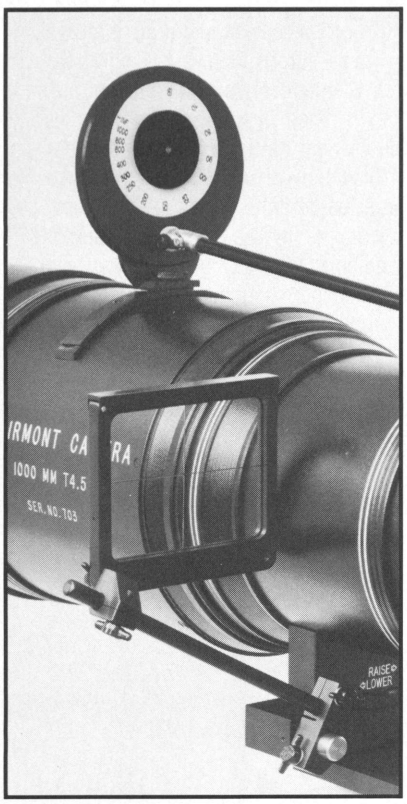
"Kirk Bachman followed focus on the Clairmont lens. The front-mounted distance pointer really made *his* day. If he'd had to look down at the scale on the lens barrel, by the time he looked *up* again the plane would have been 200 feet further away."

"We wanted the plane to be a strong black silhouette against the sunset sky, with sun highlights glinting off the aluminum wings. A lens with flare or low contrast would have turned that to mush. But the 1000mm gave us a superb cookie-cutter image."

> "The Clairmont 1000 was as sharp as my 5.6 Canon 800. And somewhat *more* contrasty. I was surprised."

Comparison with the 800mm Canon

"So now we didn't have to use the 800mm version," says Mr. Bennett. "But I *did* get to compare the footage at the dailies. The Clairmont 1000 was as sharp as my 5.6 Canon 800. And somewhat *more* contrasty—I was surprised. Anyhow, we couldn't have got that shot without it."



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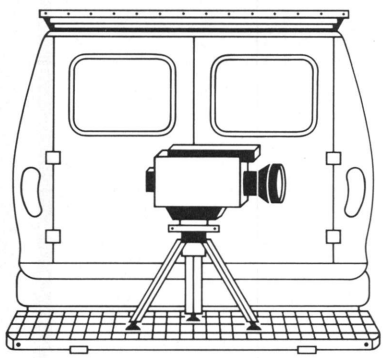

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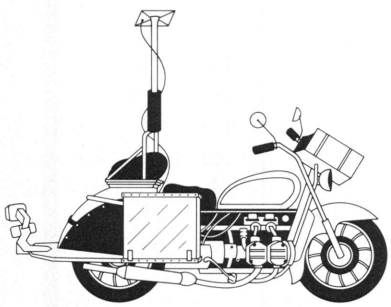

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Letters

Cheers for Super 8

Having just received and read the September issue of American Cinematographer; I noted with some interest 'The Last Page' in which Super 8 is discussed as a pro format. My question is, why has it taken so long for this recognition? I have noticed recently that Super 8 is a kind of "in" format, and certain segments of the industry tend to treat it and act as if it were a new discovery. I just wish to point out that some of us older filmmakers have been using it practically since it arrived on the scene.

I'm glad that we now have cameras available with 200' loads, crystal sound sync, and interchangeable lenses, amidst other notable features; all things which my colleagues and I would've killed for a decade ago; but, to get there, we've gone through a lot of convulsions.

In fact, for a time in the mid-70's, it looked as if Super 8 might be a dying format; what with the advent of home videotape cameras and notable items such as the failure of a fine magazine dedicated to the format, Super 8 Filmmaker, and Agfa Super 8 no longer being available (as far as I know it still isn't – if it is, somebody *please* write me!) in the United States.

Things that are now taken for granted in Super 8 production are things that we were told were impossible just a few years ago. Not that we listened; progress is made by fools and crazies doing the impossible. My most vivid memory is from a feature length Super 8 film titled *The Rave,* which was produced and directed by my friend Yianni Stamas. It involved an underwater fantasy fight sequence at night in a pool using available light. All we had was an Elmo 612 (with an underwater housing, which leaked), and 50' mags of Ektachrome 160A. It took us practically all night, and I nearly drowned twice despite being an excellent swimmer; but, we got the footage. Today, we could have done it more quickly and precisely, owing to great advances in equipment.

My main thrust is just to say that Super 8 is a great format, with unlimited possibilities; and it has been for years. Just because it is 'in' now, and the equipment is now vastly superior and on an even scale with its larger format cousins; don't treat it as a new discovery. It's been a good friend to my colleagues and I for many years, and we're hopelessly in love with it. Long live Super 8!

—William C. White
Halcyon, Calif.

Double Indemnity

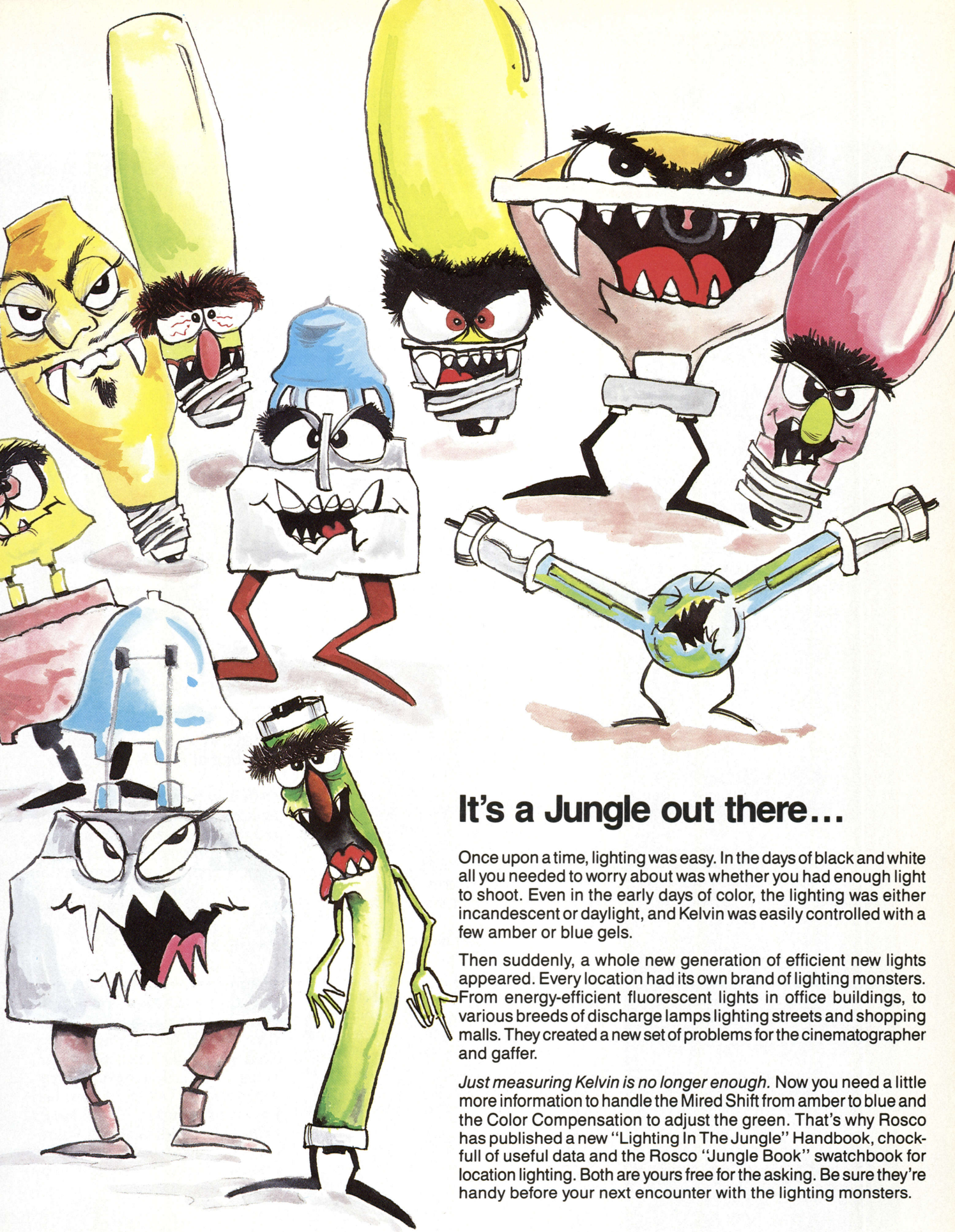
In the October issue of the magazine you ran two articles by Ron Magid about *The Whales of August*. While both pieces were quite interesting, I was surprised to see some 400 words of identical text in both stories.

Was this an editing glitch or is Mr. Magid getting extra mileage out of a nice turn of phrase – in this case several paragraphs worth? My guess, for what it is worth, is that the block of text belongs in the first article and not in the second, though I can't quite find the proper transition.

When I see the movie, I now will be doubly sure to appreciate the stark gray house and the tiny island location.

—Jeffrey Carmel
Santa Fe, Calif.

Actually, what you were seeing (as others did, also) was the ultimate editor's nightmare: an inexplicable piece of business where identical blocks of type were set into two stories. One belonged there (in the first story) and the other replaced a part



It's a Jungle out there...

Once upon a time, lighting was easy. In the days of black and white all you needed to worry about was whether you had enough light to shoot. Even in the early days of color, the lighting was either incandescent or daylight, and Kelvin was easily controlled with a few amber or blue gels.

Then suddenly, a whole new generation of efficient new lights appeared. Every location had its own brand of lighting monsters. From energy-efficient fluorescent lights in office buildings, to various breeds of discharge lamps lighting streets and shopping malls. They created a new set of problems for the cinematographer and gaffer.

Just measuring Kelvin is no longer enough. Now you need a little more information to handle the Mired Shift from amber to blue and the Color Compensation to adjust the green. That's why Rosco has published a new "Lighting In The Jungle" Handbook, chock-full of useful data and the Rosco "Jungle Book" swatchbook for location lighting. Both are yours free for the asking. Be sure they're handy before your next encounter with the lighting monsters.

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of an excellent interview with Lindsay Anderson. It was done in such a way as to be undiscernible, believe us!

—ED

More Balázs

Joseph Zsuffa's presentation of Béla Balázs was a thoroughly expert and enjoyable life-study (October issue). The career reveals a cinematographer on top of the principles of his art, a practitioner who came to be a model for others to follow, if not to emulate. What I found most valuable was Balázs' realization that the image, as Zsuffa puts it, had broken "the long hegemony of the word," had found through film, a way to revive visual communication. To break hegemony, however, is not to destroy words or concepts. Clearly, Balázs' use of the camera for the close-up, the camera angle, and then the cinematographer's role in editing a sequence of images are all conceptual, all heightened by a deft control of the word. That the hegemony of the word is broken means, actually, that it is no longer translucent, standing above the image, but has now returned to a harmonious linkage in which word and image arise together – an immanence that creates powerful aesthetic effects.

No wonder Balázs loved American films, for in them, the offspring of American thought, the sense of the immanent is everywhere apparent. It is as if the Emersonian ideal of the spirit emergent in matter had found a most congenial home in film and a most congenial articulation in the theory and practice of Balázs.

—Eugene Green
Brookline, Mass.

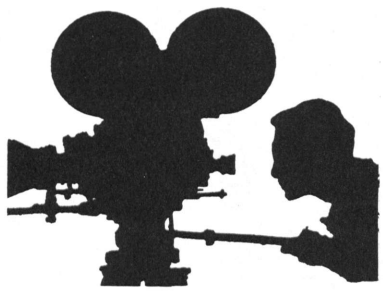
Early Horrors

The long overdue and very interesting article on *The Most Dangerous Game* mentioned the connection with *King Kong*. The last connection is a visual one. Both Count Zaroff and Kong, before they topple from their high positions (visual metaphor), clasp at their throats and throw out limp hands. It is a grand gesture for two larger than life cinema bad guys.

Incidentally the Count's "tr phy room" is quite a shocker for a early talkie horror film. Again in purely visual terms the story was moving without dialogue (Tod Browning's *Dracula* needed this, apart from the opening scenes) and the audience is riveted. Perhaps by 1934 the Hays Code would not have allowed showing the bobbing head in the tank.

Lastly, scenes from the 1932 version are incorporated into the 1945 version, *Game of Death*. That re-make was an early directorial effort of then former film editor Robert Wise. It is a good attempt, but does not have the pulsating drive of the earlier one.

—Keith Brown
Jamaica, NY



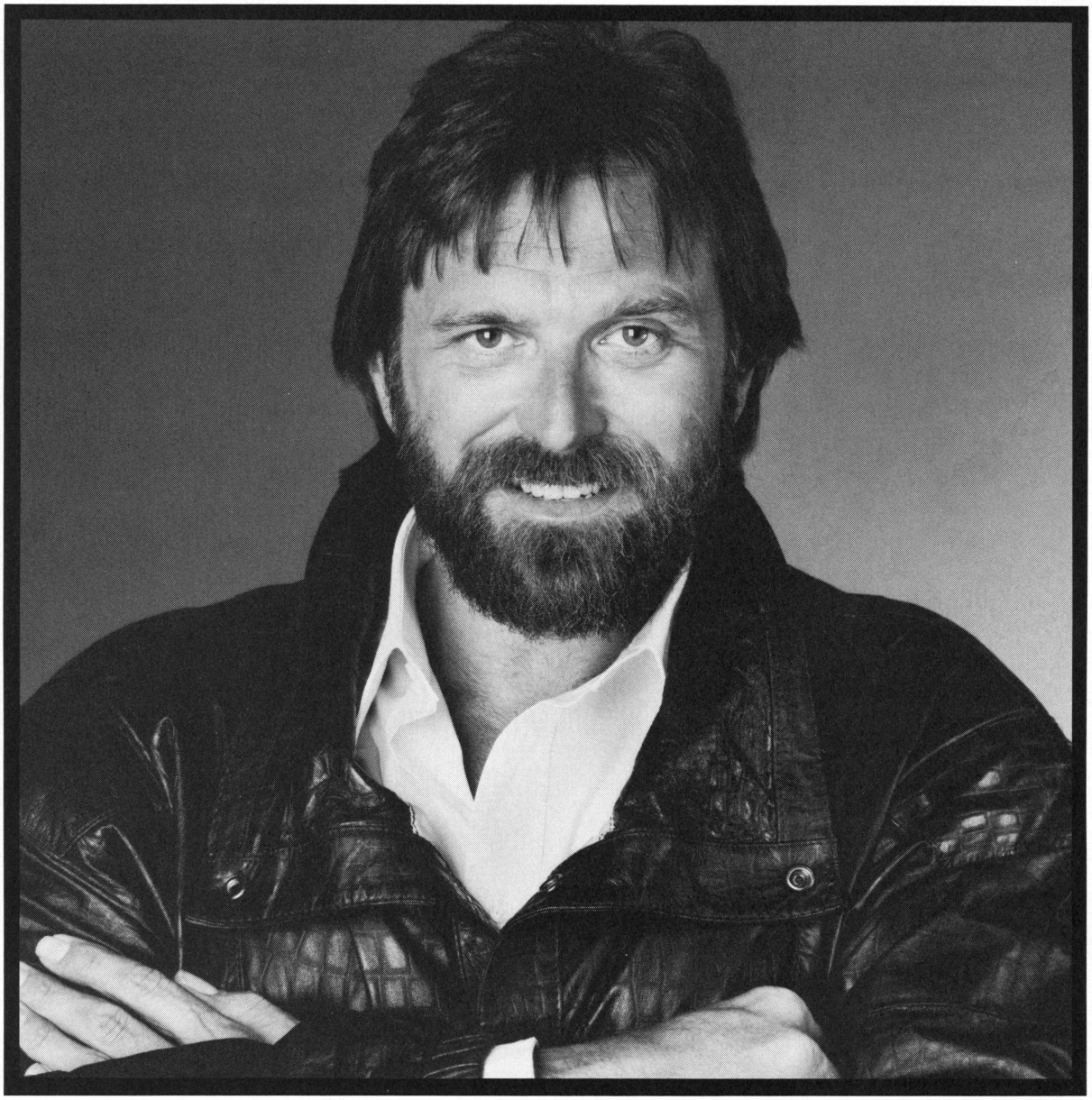
Things to Come . . .

Our January issue will feature the adventures of an American cinematographer in China, Great Britain, Spain and the USA, as Allen Daviau, ASC, recounts the shooting of *Empire of the Sun.*

In February we begin a series of articles about seminars being taught by award winning cinematographers on the subjects of film, lighting, and production techniques for specific films each has photographed.. First of the series is an interview with Steven Poster, ASC.

Pictures in the making which we intend to write about in 1988 include such titles as *Full Moon, Blue Water*, photographed by Fred Murphy; *Vibes*, with John Bailey, ASC, director of photography; *Hot to Trot*, photographed by Victor Kemper, ASC; *Married to the Mob*, with Takahashi Fujimoto as director of photography; and *Beetle Juice*, photographed by Tom Ackerman.

DYKSTRA



John Dykstra

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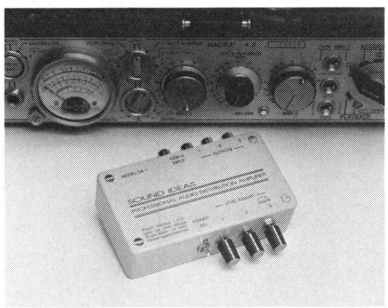
What's New



Distribution Amplifier

The Sound Ideas Model DA-1 Professional Audio Distribution Amplifier is a portable battery-powered three output audio distribution amplifier. Application is for motion picture sound, video, music and sound reinforcement whenever it is necessary to supply a high quality single ended sound source to video assist, playback speaker-amplifiers, radio cue-aid to actors, director assist and headphones.

The unit will not load down any sound source by virtue of its high input impedance. It can easily handle the higher line level output of a Nagra tape recorder. Outputs are isolated and short circuit proof; a short at the video assist will not cut off the director's phones! Each output has its own level control and enough power to drive headphones, making for a great 3-channel headphone amplifier.

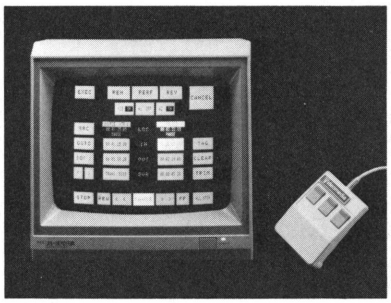
Current consumption is very low. Power is supplied by two internal 9-volt batteries which can run the amplifier for over 48 hours continuously. The DA-1 can be adapted to run directly from the Nagra minus 18 volt supply. An LED pilot light also functions as a low voltage indicator.

The amplifier is housed in a small high impact ABS box. The unit is designed for very high quality signal handling, rugged field service, long battery life and many years of trouble free operation. Precision components are used throughout. Input and output connectors are gold plated RCA phono jacks. Construction is aircraft quality.

For more information: Sound Ideas Company, P.O. Box 296, Douglaston, NY 11362, U.S.A.

Low Cost Editing

Mickey I and Mickey II are two new low cost videotape editing systems from Videomedia. All editing and machine control functions of Mickey are accomplished by the use of an opto-mechanical mouse. Both of these systems boast extremely high performance to cost ratios. The standard Mickey has distributed intelligent interfaces, 50 event memory, printer output and user programmable functions. Mickey interfaces with virtually all current popular ½", ¾", 1", Betacam and MII formats.



Mickey I is a frame accurate, cuts-only system that is upgradeable to the Mickey II system with A/B roll. Mickey includes a built-in video mixer and an automatic two channel audio-follow-video mixer. Mickey II can auto-match, auto-extend and clean the edit list with one keystroke. Operation of Mickey is much faster than with a conventional keyboard and can be effectively learned by inexperienced users in less than 30 minutes.

Mickey is the first editing system to use the V-LAN system. This makes Mickey essentially a "network" type of device that can theoretically control more than 32 devices. This open-ended architecture hints that many options and power increasing features will be made available for Mickey.

For more information: Videomedia, 211 Weddell Dr., Sunnyvale, CA 94089, (408) 745-1700

New Montage II Systems

Montage Group, Ltd. announces that the new Montage II Picture Processors have been delivered to Hollywood-based Pacific Video and are assigned to fall television projects.

The newly reorganized Montage Group, Ltd. has moved its engineering and manufacturing headquarters to Littleton, MA. "Manufacturing plans call for the production of a minimum of 50 systems of the enhanced Montage II models to be shipped between now and June 1988," said Michael Lowe, president of Montage Group, Ltd. "We are extremely gratified that work at our new manufacturing plant is proceeding smoothly to meet demand, and additional deliveries of the new Montage II systems to the Los Angeles area and other parts of the country will be made per schedule."

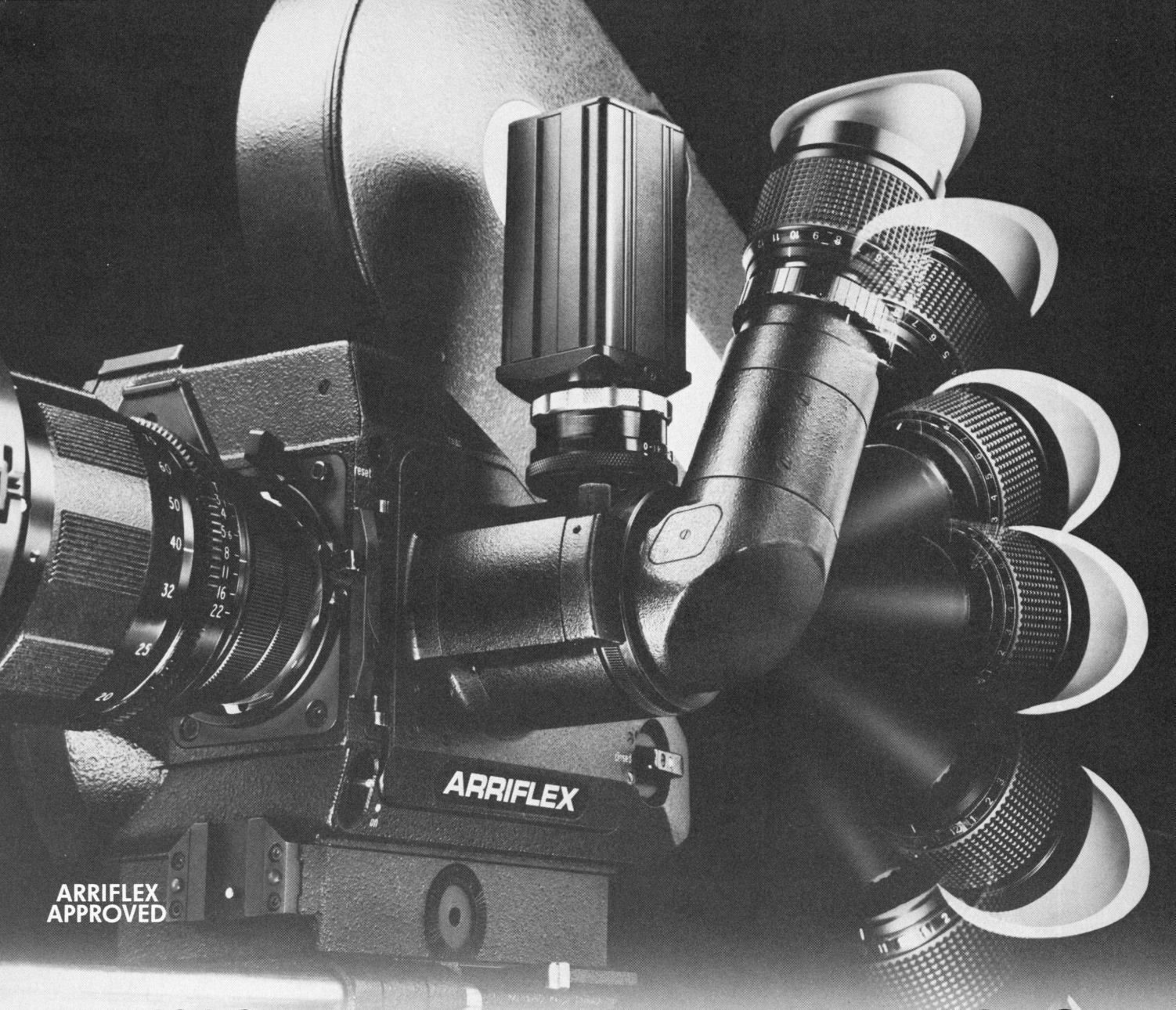
All new, enhanced Montage II systems are compatible with existing Montage Picture Processors currently in use in the United States, Canada and Great Britain.

The Montage Picture Processor is a non-linear, random access electronic editing system which was first introduced at NAB 1984. It is ideally suited for editing single-camera projects shot on motion picture film or videotape. The system has been used extensively to edit commercials, music videos, episodic television series, full length documentaries, as well as theatrical motion picture features.

For further information, contact: Montage Group, Ltd., 1 West 85th Street, Suite 3A, New York, NY 10024. (212) 362-0892.

Lens Holder & Lens

Widescreen advocates who use the anamorphic lens will be inter-



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Camera Service Center designs and manufactures the *only* video tap modification for the ARRI 35-3 Orientable Viewfinder Door that's approved by Arriflex. We've designed it for camera people who need both high quality video *and* the versatility of the 35-3 Door's original design, plus:

- Retains the full 210° rotation of the original ARRI Door *without any interference.*
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Our new 35-3 video door is now FOR SALE! It's available in two ways: send us your ARRI Orientable Door and we'll return it in only 4 weeks with the system built in with the camera of your choice; or you can buy the whole system, complete with new 35-3 door and video camera.

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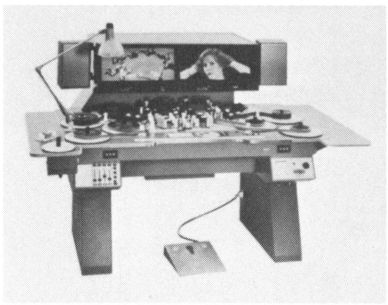


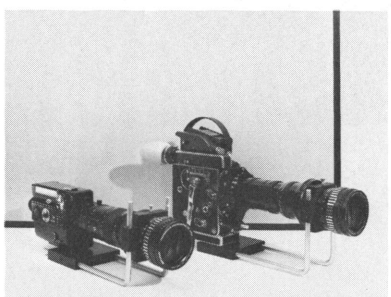
ested in this simple Universal lens mount for the Kowa Prominar Anamorphic (1.75X) lens.

This mount will adjust to nearly all Super 8 cameras and many 16mm cameras. The base is a non-stick black plastic for non-binding movement of the adjustable lens holder.

The lens holder has been standardized for one of the largest of the anamorphic lenses that is still available new. This coated lens has a rear object lens of 52mm which will cover the front object lens of many of today's large zoom lenses. Mounted free of the prime or zoom lens, it is easier to focus the camera lens.

The PA-35 has a focusing distance from 5 ft. to infinity, with a locking ring. The lens mount can be customized for a number of other lenses and cameras.

For further information, contact In House Productions, 1312 Savannah Dr., Irving, TX 75062, (214) 255-1645.

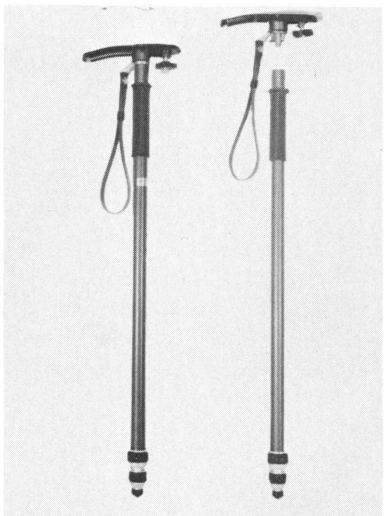


Editing News

Steenbeck, Inc. has appointed Birns & Sawyer, Inc., of Hollywood, CA, as authorized West Coast dealer for its film and sound editing machines. Manufactured in West Germany, more than 17,000 machines have been produced and are still in use worldwide.

The ST-72IN is Steenbeck's latest Model 35mm, 8-plate flatbed editing machine. Standard features include: two picture and two sound heads, Z5001 universal electronic counter measuring feet, frames, and elapsed time, crystal referenced electronic motor at 24/25 fps or 24/30 fps on request, and instant control response with high speed forward and reverse. The Steenbeck is a modular system, allowing for individual needs.

For further information: Birns & Sawyer, Inc., 1026 N. Highland Ave., Hollywood, CA, 90038, (213) 466-8211



Monopods

The standard platform of all Gitzo monopods (except those with shoulder support) can be replaced by a soft cushioned handle with retractable ¼" (or ⅜") screw, for alternate use as a walking stick.

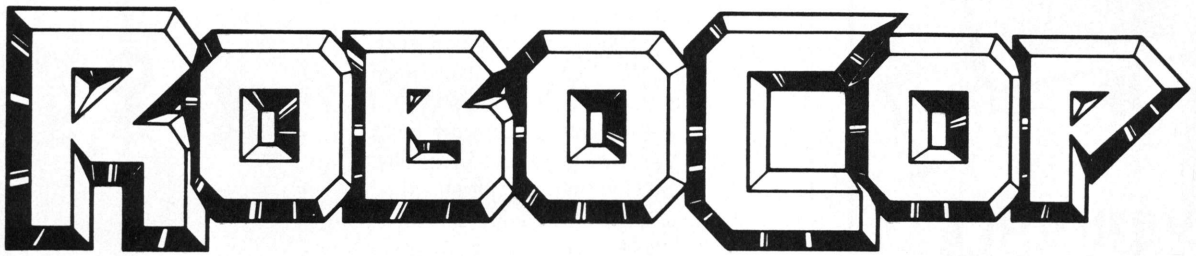
Hand assembled of stressproof light metals as used in airplanes, the extra solid, tubular monopods extend smoothly, lock firmly on waterproof resin washers, without any binding – ever. The deeply anodized (1/10mm), corrosion proof extensions remain a full 2" in the next larger tube, for extra long and strong overlap, providing optimal rock stability.

For more information: Karl Heitz, P.O. Box 427, Woodside, NY 11377, (718) 565-0004.

Updated 35mm Lens

Century Precision Optics is pleased to announce the availability of a new updated conversion of this popular 9.8mm T/2.2 Kinoptik lens for 35mm.

The extensive modification



Photographed by Jost Vacano

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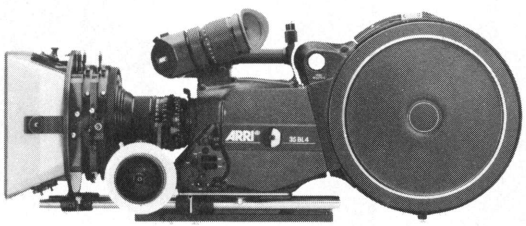

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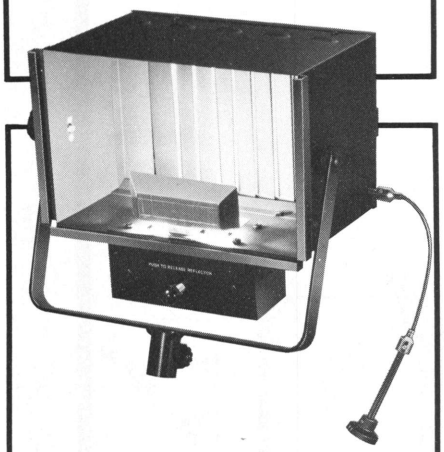

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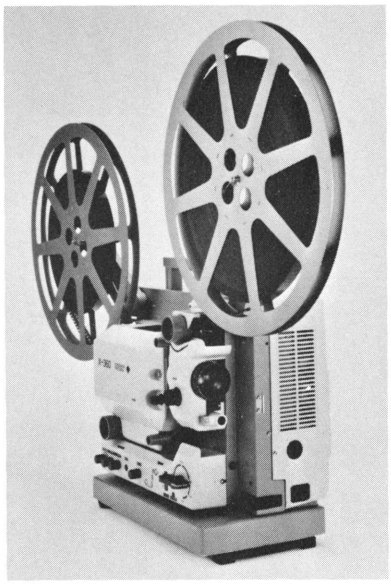
includes a new multiple lead, non-rotating hard brass and aluminum focusing mount. The precision focusing mount is designed to insure consistent smooth focusing.

As part of the new design, Century is able to reduce the minimum focus to 1" from the front of the lens – a unique feature for table-top cinematography. The large, clear engravings, integrated follow focus and iris gear are designed to greatly assist in the ease of operation.

Additional features include: 2" X 2" glass filter holder and lens mount choices that include Arri PL and Mitchell BNCR (for Moviecam and Arri Hard Front Cameras).

For additional information contact: Century Precision Optics, 10713 Burbank Blvd., N. Hollywood, CA, 91601, (818) 766-3715

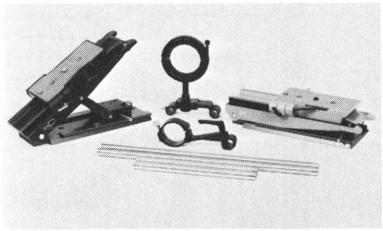


Xenon Portable Projector

A new 16mm projector offers 350 watts of xenon lamphouse, 25W, 8 ohms loudspeaker output as well as 0 db 600 ohms audio line output. Hokushin's exclusive features are quick thread "roll load," lightweight switching power supply, auto release sprocket mechanism, high speed rewind, and auto loop restorer.

Options include: laser optical sound, auto changeover, portable transport cases and remote control.

For more information contact Rangertone, toll free number: 1-800-221-1823.



Bridge Plate

With this product the advantages of a bridge plate with angle positioning produces the optimal union. This bridge plate is ideal for both film and video cameras.

The peD universal angle bridge plate can be moved from 0° to 55°. An automatic snap-lock function (from 15° to 45°, a lock every 5°) enables fast, defined changes of position. At the same time it is a safety measure against uncontrolled clamp release. Automatic locking in zero position ensures optimal operational safety (the camera cannot dive unintentionally during vertical panning).

Two guide-support rods on each side of the camera plate are used for attaching accessories (lens support, holder for zoom and focusing motor, matte boxes etc.). Both the tripod and camera base plates have dove tails enabling easy location of the optimal center of gravity of the camera with lens. The camera plate can be removed easily from the bridge plate when the lock pin is released.

Low weight and compact height combined with great steadiness are the characteristics of this peD universal angle bridge plate. It has been built so that when in position (locked) it is free from distortion and vibration.

For more information: PED Denz, Josephsburgstraβe 83, D-8000 München 80, Telefon: (089) 431-6047, Germany.

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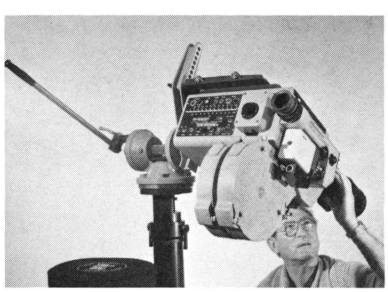
Surface Mount Mike

AKG Acoustics introduces the C562 BL boundary layer microphone. The C562 is a pre-polarized condenser surface mount microphone for recording situations where unobtrusive microphones are vital, or where the natural character of its sound is desirable.

Omni-directional in the hemisphere of its low profile plate, the C562 BL's sensitivity and frequency response depend largely on its placement, though bass reproduction has been significantly improved in the C562 over similar designs. Compared with conventional omni-directional microphones, the C562 BL's output is 6 db hotter when mounted on a large surface (floor, ceiling, piano lid, etc.), and will result in better signal to noise ratio and acoustical feedback behavior.

Simple to place and unobtrusive in its round, flat black appearance, the C562 BL is especially beneficial when used for self-conscious people.

For more information, please contact: AKG Acoustics, 77 Selleck St., Stamford, CT 06902.



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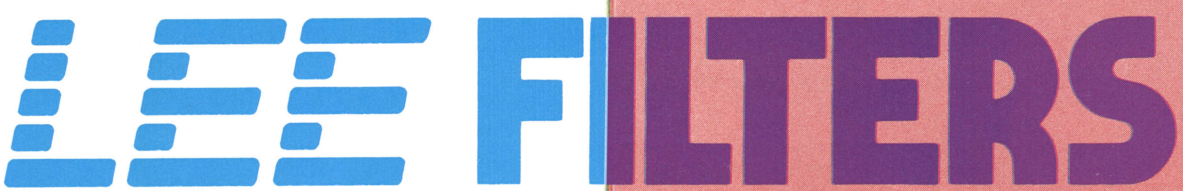

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West Coast Distributor: Cine Mills Corporation, 3500 West Magnolia Avenue, Burbank, California 91505
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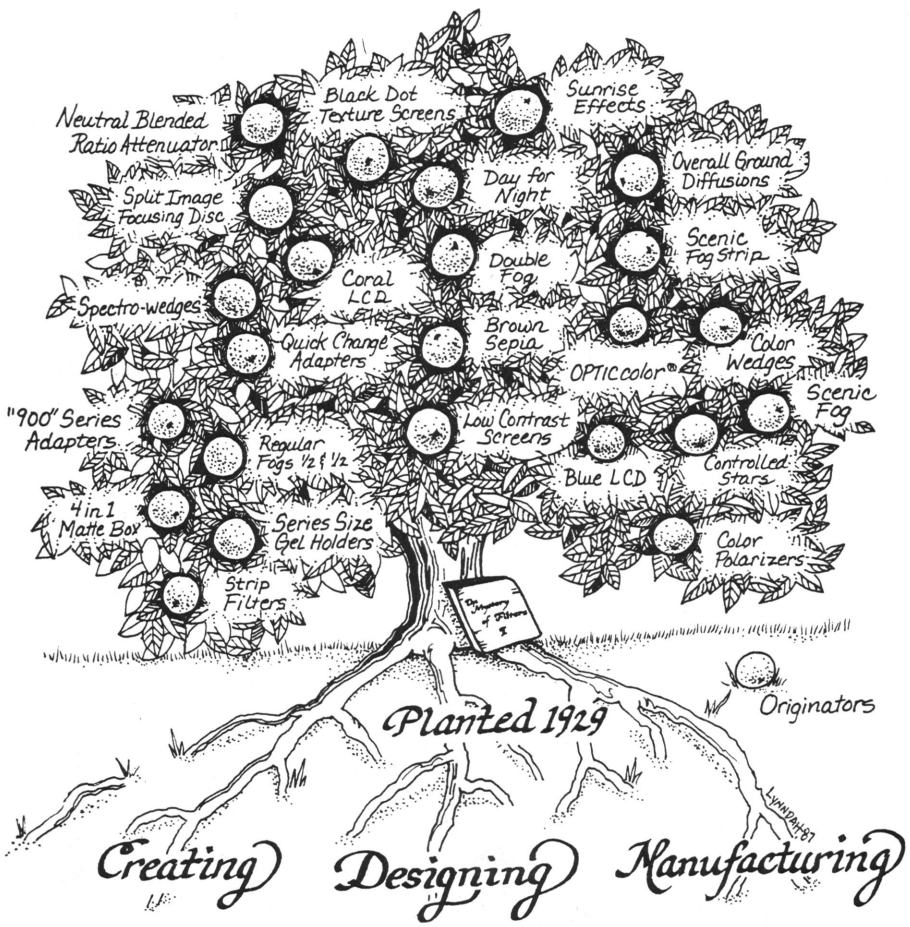

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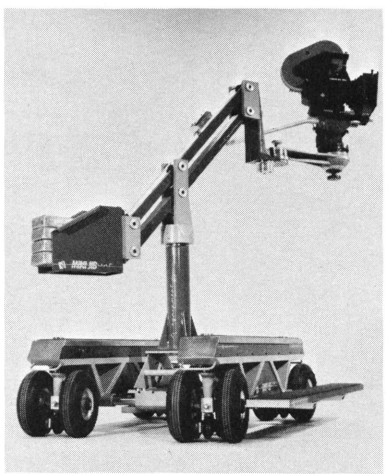
use with the Image 300 35mm high-speed 24-300 fps is available at Alan Gordon Enterprises. The IMAGE 300 head can also be used with other cameras.

With a tilt-range of 260° the new IMAGE 300 fluid head permits use of the camera in otherwise difficult positions – including upside down for "reverse screen motion slow-motion effects" (which must be filmed at high frame-rates). Featuring a camera mounting platform measuring 14" long by 12½" wide (with the platform height adjustable from 5½" to 11½" from the head fulcrum point), the new Image 300 head allows the Image 300 camera – or other heavy camera – to be firmly supported in any possible filming situation.

The 260° tilt range may be ordered for any pre-determined portion of a possible 360° circle.

For further information, contact Alan Gordon Enterprises, Inc., 1430 Cahuenga Blvd., Hollywood, CA 90028, (213) 466-3561.



Doorway Dolly & Jib

Pneumatic tires are standard, but the Doorway dolly by Egripment, can be fitted with hard rubber wheels or trackwheels for use on straight and curved track. Steering is accomplished by use of a pull handle with the possibility to lock the position of the steering wheels in any angle.

When using the Doorway on track, the special push/pull bar with sliding handgrips enables the grip to walk alongside the dolly track. The platform is carpeted for a non slip low maintenance surface. A specially de-

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signed seat swivel support completes the Doorway dolly, as "the high tech." dolly in the industry.

The revised lightweight Mini Jib arm is made from high quality aerospace alloys in combination with aluminium castings, and has several new features. The unit now has a fine adjustment which enables the operator to balance the Mini Jib very precisely.

The pan and tilt movement is fitted with a retarding system to vary the tension on the movement and give a smoother operation – we believe that this is the first Mini Jib with this option. Although the weight of the Mini Jib is only 28 kgs (without weights) it can carry a load of up to 45 kgs.

For further information: Egripment, P.O. Box 1126, 1200 BC Hilversum, Holland, or 7240 Valjean Ave., Van Nuys, CA 91460, (818) 989-5222.

Audio Editing System

Positive Video is pleased to announce the installation of an Alpha Audio "Boss" Audio Editing System in the company's audio division. The "Boss" is the second of its kind to be installed in the Bay Area (the other being Lucasfilm) and the only one available in a video post production facility.The new system uses Lynx synchronizers to slave up to four ATRs to an Ampex 1" VTR using VPR-3 protocol. This will allow producers to achieve instantaneous lock-up of all source tapes and to mix directly to their edited video masters.

Positive Audio also features 2 through 24 track recording/playback as well as computer aided composing and composition. The studio is located just 10 miles south of the San Francisco Airport at 1250 San Carlos Avenue, San Carlos, California, 94070. Call (415) 595-4041 for further information.

New Color Filter

GamColor, a new line of deep-dyed polyester color filters, is now available from The Great American Market.

GamColor is a premium quality color medium for use with all light sources. Manufactured by a patented deep-dyeing process, it features a scratch resistant surface, durability in high heat applications and even, consistent color. The clear, 2-mil thick polyester base is strong, easy to handle and has superior transmission properties. The system, designed by The Great American Market, divides the visible spectrum into sections convenient to the lighting designer and classifies the colors according to hue. Illustrated on a full color wall poster, it provides an overview of the GamColor palette and simplifies color selection.

For more information, contact The Great American Market, 826 No. Cole Ave., Hollywood, CA 90038; telephone (213) 461-0200. △

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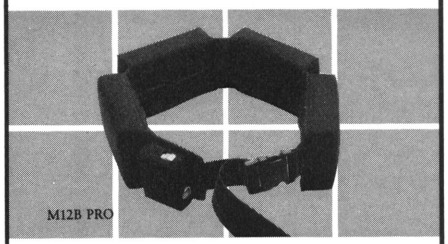

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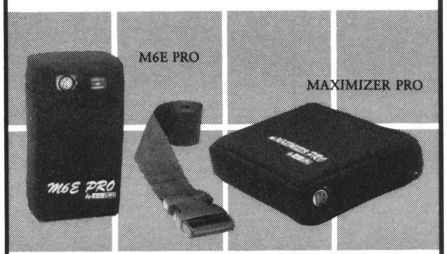

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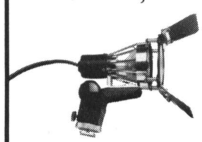

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The Bookshelf

by George L. George

Commemorating Hollywood's appearance on the California map in 1887, **Happy Birthday, Hollywood!** is an informative and entertaining recounting of the growth of a modest farming community into the movie capital of the world. Decade by decade, history is unfolded in evocative stills of early landmarks, filmmaking through the years, star portraits and celebrities in informal poses, with a running commentary by Michael Webb (*Motion Picture and Television Fund, Los Angeles, $39.95*).

A fascinating look at turn-of-the-century American cinema, **Before Hollywood** describes 60 notable silent movies selected by film historian Charles Musser and film scholar Jay Leyda as part of a traveling exhibition. Edited by John L. Fell and colleagues, this attractively illustrated volume highlights the inventiveness and spirit of a nascent art (*Hudson Hills Press/American Federation of Arts, NYC; Rizzoli, distr., NYC, $35*).

In **A Hollywood Education,** David Freeman spins witty insider tales of movie dreams and easy money, smoothly fitting fictional yet recognizable film industry characters into fictional yet recognizable film industry situations (*Dell, NYC, $6.95*).

An illustrated guide compiled by Jeff Conner, **Steven King Goes to Hollywood** surveys all 15 films, from *Carrie* to *Stand By Me*, authored by the thriller specialist. It provides significant data on their production, financing and profits, technical problems, camera artistry, and directorial flair (*NAL, NYC, $19.95*).

Three of William Faulkner's script outlines written for Warner Bros. and collected in **Country Lawyer,** display the novelist's cinematic concepts and his ability to adapt story lines to screen requirements. **The Battle of Brazil** incorporates the script of *Brazil,* an offbeat feature directed and co-written by Terry Gilliam, and Jack Matthews' account of the noisy conflict over censorship that pitted Gilliam against Universal Studios (*U. of Mississippi, Jackson, $12.95; Crown, NYC, $19.95*).

In **Film Magic,** David Hutchison expertly outlines the basic principles of special effects' art and techniques. He includes miniatures, frame-by-frame model animation, traveling mattes and matte paintings, and computerized imaging, as used in such films as *E.T., Star Wars, 2010,* and *King Kong.* A useful glossary and a descriptive guide to 80 special effects movies are appended (*Prentice-Hall, NYC, $12.95*).

Legal complexities in the various areas of the entertainment field are addressed in **Law and Business of the Entertainment Industry** by Donald E. Biederman et al. This authoritative study presents a clear and concise compendium of significant material dealing with film, television, advanced technologies, sound recording, theatre, literary and music publishing, as well as personal rights and professional representation. The book's expertise and its scope make it an invaluable resource tool for the prevention and solution of legal problems (*Auburn, Dover, MA $50*).

As conducted by Walt Disney veep Randy Bright, **Disneyland: Inside Story** is a super deluxe tour of a favorite American playland. This attractive, richly illustrated large format volume narrates in absorbing detail the history of the various Disney parks, describing their world-famous attractions and hinting at the financial rewards of catering to elaborate childhood fantasies (*Abrams, NYC, $35*).

An effective reference work of encyclopedic proportions, **The British Film Catalogue 1895-1985** lists

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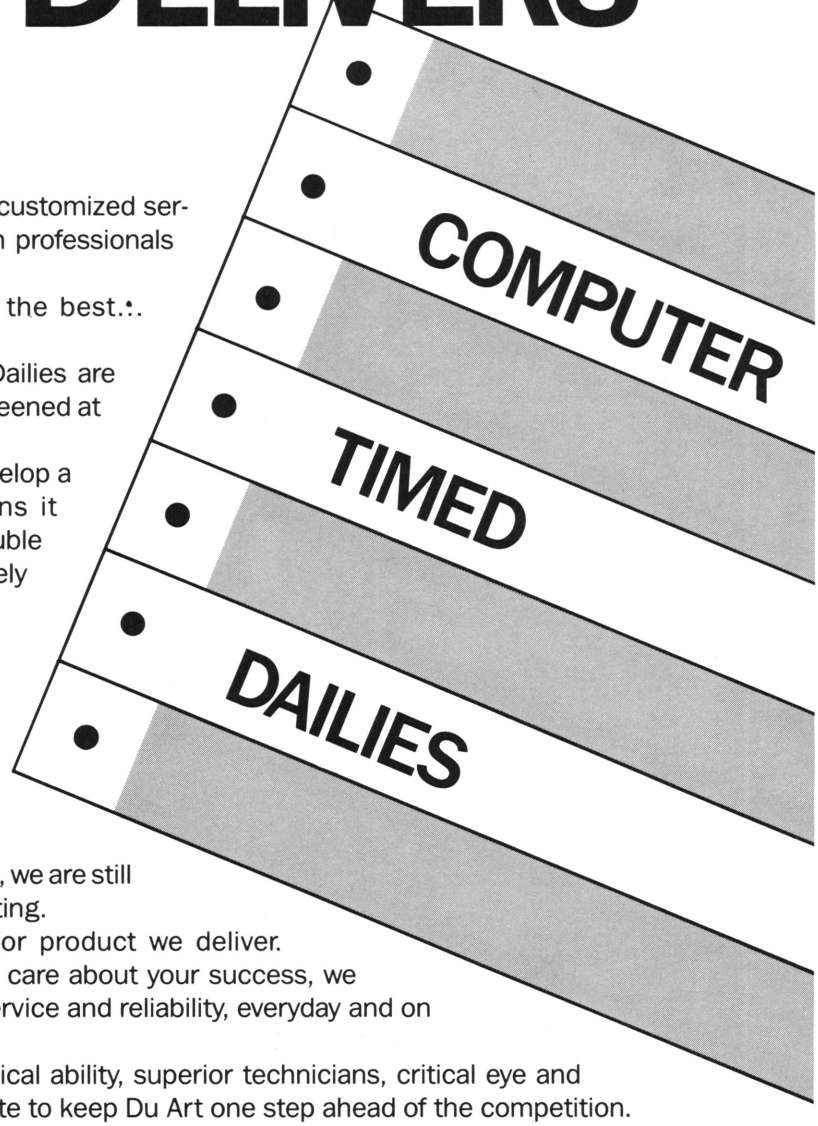

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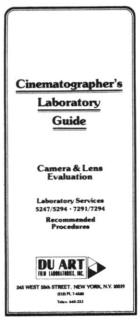

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in chronological order all U.K. feature films produced since the invention of the kinematograph. Compiled by Denis Gifford, it includes over 15,000 titles numbered consecutively for convenient research, with complete credits, plot summaries and an alphabetical cross-index (*Facts on File, NYC, $75*).

Today's first family is portrayed in two engrossing biographies: **Early Reagan** by Anne Edwards and **The Search for the Real Nancy Reagan** by Frances Spatz Leighton. Unfailingly objective and insightful, Edwards accumulates momentous details about every period of Ronald's professional and private life. Nancy, insecure and possessive, is given friendly treatment by Leighton, stressing the fiercely supportive wife and the image-conscious public person (*Morrow, NYC, $21.95; Macmillan, NYC, $19.95*).

Popular biographer Lawrence J. Quirk tackles Ronald Reagan's first wife in his understanding biography, **Jane Wyman: The Actress and the Woman.** A lively book, rich in factual detail and perceptive comments, it traces compellingly the development of Wyman's personality and the maturation of her talent (*Dembner/Norton, NYC, $10.95*).

A startling portrait of the late Grace Kelly emerges from James Spada's biography, **Grace.** Her life, he claims, was a triumph of myth over reality, as he discloses an unexpectedly active Hollywood sex life, a marriage to please her socially ambitious father, and public visibility to evade loneliness and boredom (*Doubleday, NYC, $17.95*).

An unauthorized memoir, Charles Higham's **Brando** reveals the talented actor as moody and haunted by inner contradictions and dark impulses. Relentless womanizer, eternal rebel and champion of social reform, Brando follows in his life and career an erratic course from Oscar-Winning performances to reclusive misanthropy (*NAL, NYC, $18.95*). △

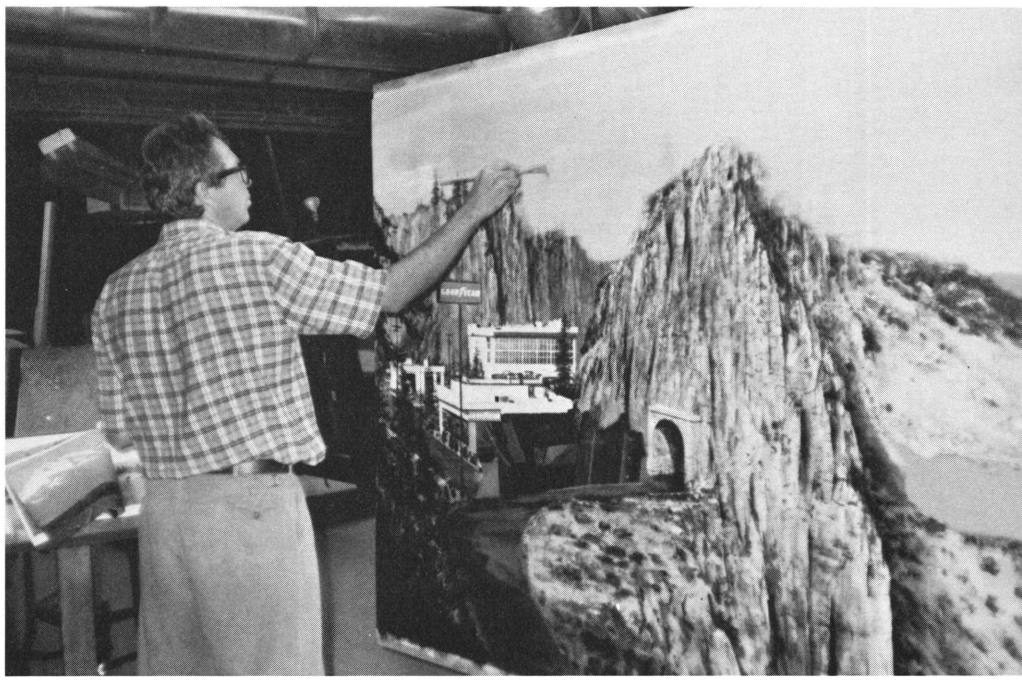
Masters of Matte Photography

SPECIAL PHOTOGRAPHIC EFFECTS were an important part of moviemaking from the very beginning. An Edison employee, Alfred Clark, apparently started it all when he photographed *The Execution of Mary, Queen of Scots* for the peep-show device, the Kinetoscope, about 92 years ago. The trick was to show the queen being led to the chopping block. Then – without any change in camera angle, the royal headsman swings his axe and her highness' head rolls into a basket.

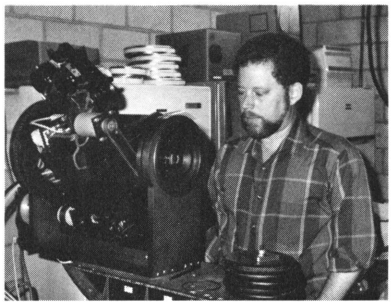
The simple device of halting the camera crank while the executioner "froze" at the top of his stroke and the queen hurried off scene, substituting a dummy for the victim and resuming action as the headsman completed his task, has the same significance to special effects as the invention of the wheel has to travel. Other techniques followed, each more sophisticated than what had gone before. None has been of greater importance or been used more widely than the matte shot, in which the arts of painting and cinematography are combined to create scenes that would be impractical to produce via conventional means.

This month's cover is an excellent example of the matte shot, being one created by the artists and craftsmen of Illusion Arts for the recent Universal picture, *Dragnet*. Although it appears to be perfectly real on the screen, the scene could not have been photographed normally. The night scene depicts an auto and players on a road just under the landmark HOLLYWOOD sign, which is situated on a mountainside north of the movie capital. In the background can be seen the lights of the city.

Actually, there is no road at this location, whatever the demands of the script. The road and car were photographed elsewhere. The rest of the scene – the night sky, the 50-foot letters of the sign, the hilltops and the twinkling lights below – were painted by artists Syd Dutton and Albert Whitlock. Cinematographer Bill Taylor, ASC, and matte photographer Mark Sawicki composited the scene in VistaVision on the original negative. Optical camera operator Mark Freund then executed a pan and tilt within the VistaVision frame, panning the auto into the scene, then pulling back and tilting up to show the sign.



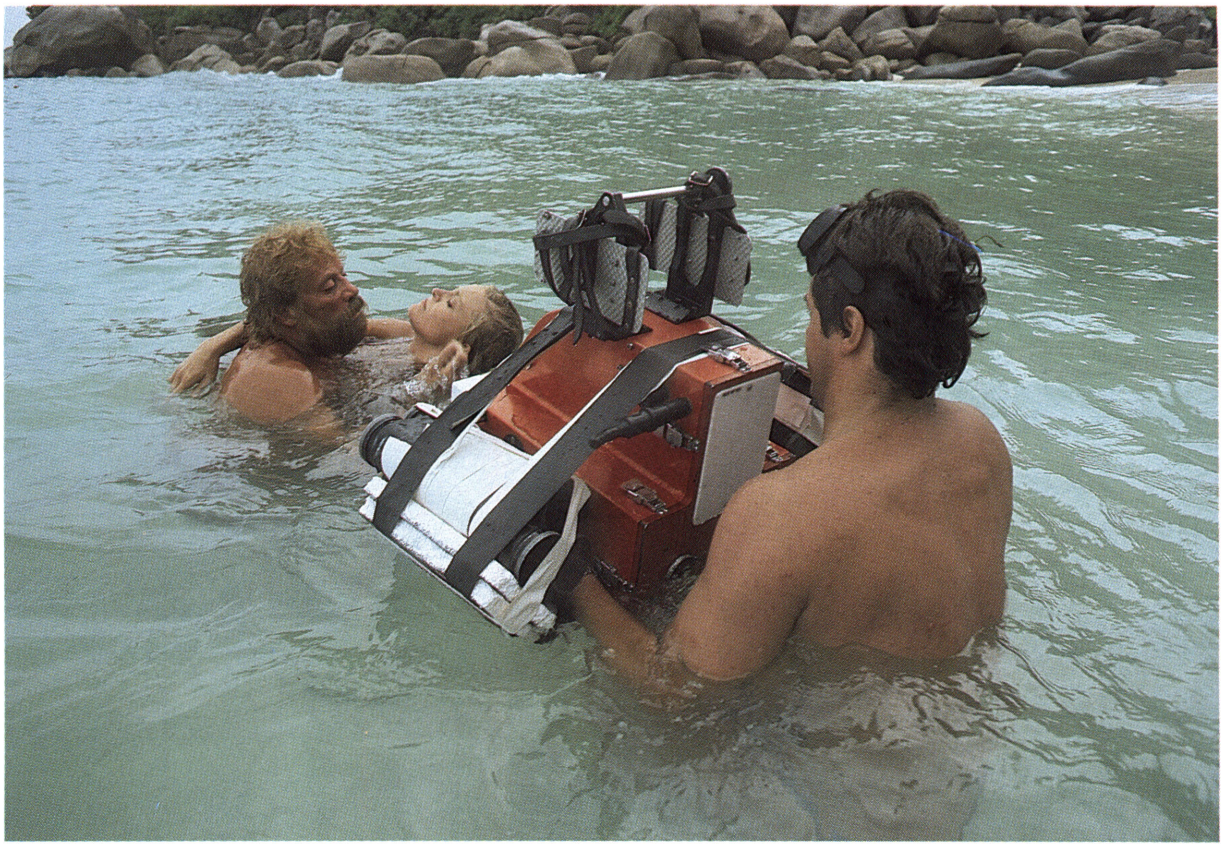
There are only a few qualified matte artists at work today. Some are self-taught (the academic training desirable for this type of work being increasingly difficult to come by). Dutton was assistant to Albert Whitlock at Universal for years, an incalculable advantage inasmuch as the now semi-retired master is one of the most gifted artists ever to work in motion pictures. Taylor, too, was long associated with Whitlock. Taylor and Dutton founded Illusion Arts several years ago after Universal ceased to operate its own special effects department.



Syd Dutton puts the finishing touches on a matte painting.* Below: *Bill Taylor, matte cinematographer and co-owner with Dutton.

It is interesting to note that the majority of photographic effects done at Illusion Arts are utilized in mostly mainstream productions rather than in the science-fiction and fantasy films that are generally thought of when special effects are considered. Effects can be as important to the creation or enhancement of reality as to the telling of tales from times long, long ago and galaxies far, far away.

– GT



Valentine with underwater camera photographing Oliver Reed and Amanda Donohue. **Opposite page:** *"Underwater airplane" being tested in pool.*

Down to the Sea for *Castaway*

by Mike Valentine

Lucy Irving's best selling book "Castaway," tells of her real life experience living for one year with her husband, Gerald Kingsland, on an uninhabited desert island. It is perhaps one of modern man's most common fantasies – to get away from it all and be totally self sufficient, living alone on a desert island.

Turning "Castaway" the book into *Castaway,* the motion picture, had already taken two years of planning, writing, casting, searching for locations and choosing a crew, as well as the 10,000 other things that needed to be done behind the scenes before even one foot of film is exposed.

With just a few weeks left before shooting started in the Seychelles Islands, the director chose me as his underwater cameraman. I was invited to Elstree film studios to have a chat with somebody called Nicolas Roeg. At first I thought the call was a joke. He had directed *Walkabout, Don't Look Now* and *Man Who Fell To Earth,* amongst other films. The call must be a hoax. Arriving at Elstree, I found the call was not a hoax; in fact it was to be the start of the most exciting two months of my life.

Contacting the director of photography, Harvey Harrison, I discovered that he would be using a Panavision Panaflex fitted with Canon primes. I therefore chose a Canon 14mm as my main lens, (most underwater sequences are shot on a wide angle lens in an effort to increase clarity by shooting closer to the subject). Although Harvey was using diffusion on his lenses I decided not to, as even in clear tropical water there are fine articles in suspension, acting as a

type of underwater diffusion filter. *Castaway* was shot using a mixture of Fuji 8511 and 8514 and I used both stocks rated at 150 125 and 150 500 respectively. Until now I had always used Kodak, but was very pleased indeed with the result of Fuji.

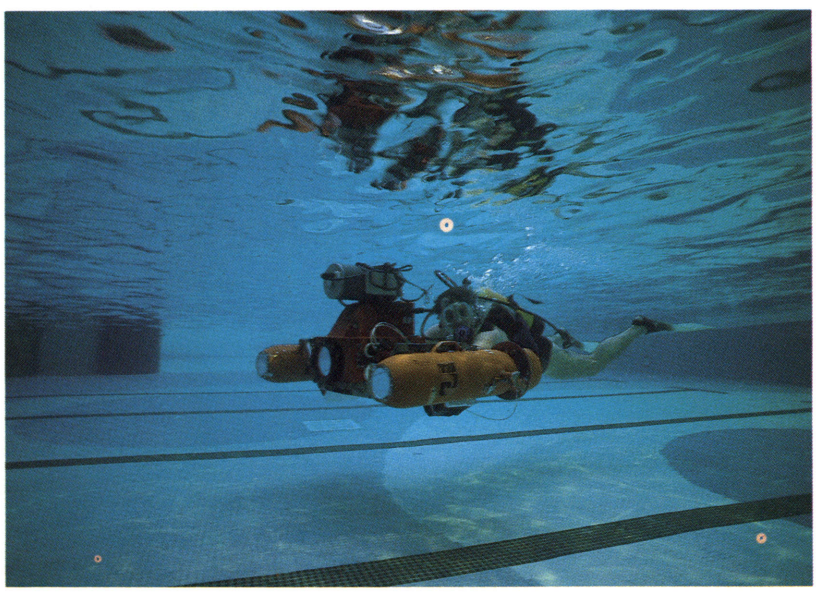
For underwater work, I used a 35mm Arriflex in a housing which had been designed to film underwater scenes on *The Deep*. All controls for the camera and lens are available through the housing, including variable speed control which was fantastic, because there is nothing more annoying than having to swim back to the boat (which may be some distance away) just to change frame speed.

Before we left England, my first major task was to design something that would 'fly' the camera and myself through the water and have the ability to "barrel roll" through 360° and "loop the loop" just like an aeroplane. No easy task when you consider that the camera alone is so heavy in air that one person cannot lift it at all. The answer was to use two Farallon diver propulsion vehicles, one either side of the camera and when "flying" to hang onto the camera handles, using legs and fins for maneuvering. With this problem solved it was off to the sun, ready for the real work to begin.

On arrival, our first job was to check that all the equipment had arrived safely and adapt it to the intense humidity. Every department of the film was suffering from it – lights, cameras, sound, make-up; even our small air compressor looked glum and 'sweaty' with condensation. Eventually, the problems were overcome and after a few days "recce" of the underwater sites surrounding the islands, I realized that we had all really arrived in paradise.

The first scene I had to shoot included Oliver Reed, who plays Gerald Kingsland, and Amanda Donohoe, who plays Lucy Irvine, escorting a young photographer through the surf to her waiting helicopter. She has landed with the couple on the island to photograph their arrival and two hours later is leaving for the "real world." In the scene we used plastic rays pulled by wires as well as some real less "tame" ones.

Next came a shark sequence. The underwater "aeroplane" was used to simulate what a shark seeks when swimming through the water and with some practice the rig worked well and I soon had the shot in the can, but the crew had discovered the joy of "flying" over the reef with the "torpedo" camera – if I had been selling



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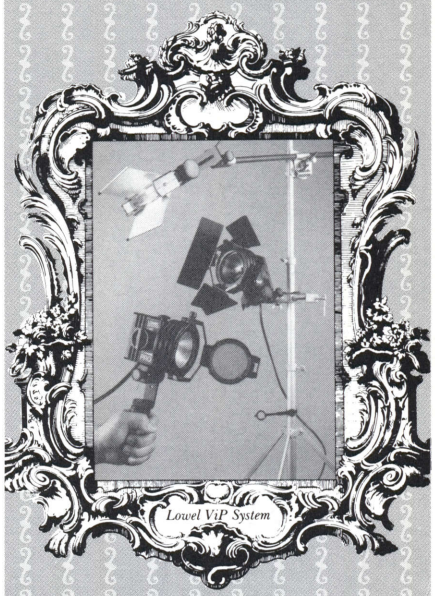

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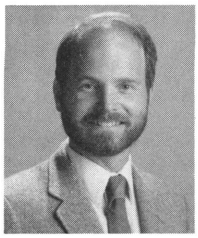

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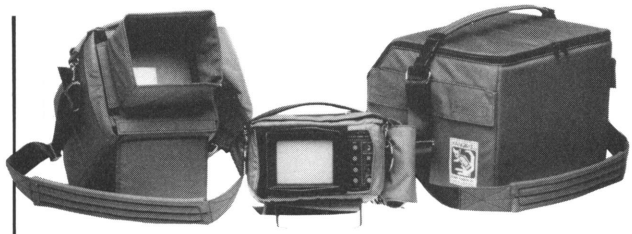

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it to the sides of the camera. This did the trick. The same technique was used to film Gerald washing Lucy in the sea after she has been poisoned by eating some raw beans.

As for the more surrealistic underwater scenes in the film, there are no optical special effects used. Everything seen really is down there and *Castaway* gave me the opportunity of exploring some avenues of the underwater world which have been little used in underwater features.

Being an underwater cameraman does not necessarily mean filming underwater all of the time. We also used the camera in a sequence where Gerald and Lucy are making love in their hut during a storm, which is then destroyed by a tidal wave. This was done by dropping 9½ tons of water from drop tanks onto a specially rigged hut, while being blasted with wind machines and the "prop-wash" from a tethered aeroplane. It is one of the most visually exciting scenes of the film and well worth the several night shoots it took to achieve.

Back in London, the film was finished ahead of time and shown at the London Film Festival. When it was over, there on stage, having seen it for the first time, was Lucy Irvine herself. Asked by the audience what she thought of it, she replied emotionally, that she had come quite prepared to see something exploitative and awful. What she had found instead was a wonderful representation of the most important year of her life.

Some critics who have seen the film have called Amanda Donohoe's portrayal of Lucy as "outstanding," while Oliver Reed, is said to have given "the performance of his career."

Castaway has been my first feature film and I will always be indebted to Nic Roeg who gave me the fantastic opportunity of working on such an exciting project. △

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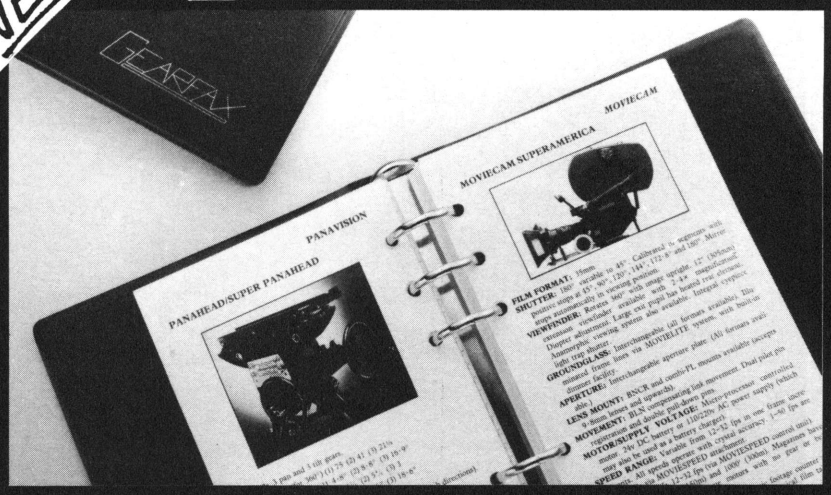

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"CONTINENTS ARE SWEPT away and with them laws and morals! Only a handful of humans survive to populate the naked earth! One woman for ten men . . . and no law known except desire! *Deluge*. An astounding story of the destruction of our modern world . . . Gripping romantic spectacle of the age. RKO Radio Picture."

All of these fetching lines appear in one two-column ad that heralded the arrival in New York of one of the most unusual movies of 1933, *Deluge*. The ballyhoo, as always, may have been overly enthusiastic, but it didn't lie: *Deluge* delivered spectacle, sex and mass destruction as advertised, in heavy doses.

The most remarkable part is that it was an RKO Radio picture in name only. Actually, it was a product of that segment of the film industry known as Poverty Row, made wholly by Admiral Productions at a rental studio. During the Depression the small independent producers obtained financing and deferred lab costs, rented studio space by the day or week, avoided retakes and special effects, and produced on shoestring budgets and fast schedules. Most dealt largely in low-budget Westerns for the rural and Saturday matinee customers. Their non-Westerns typically were designed for the lower slot of double-bill programs.

Deluge was by far the biggest picture to emerge from Poverty Row, although it cost only a fraction of what a major studio would have had to spend to produce anything comparable.

Admiral was another name for KBS Productions, a company founded in June 1932 by three shrewd filmmakers, Burt Kelly, Samuel Bischoff and William Saal. Headquartered at California Tiffany Studios, which had grown on the old Griffith-

New York City is engulfed by the Atlantic.

Triangle lot near the junction of Sunset and Hollywood Boulevards, KBS had produced a remarkable group of pictures for World Wide, probably the classiest of the independent companies known collectively as Poverty Row. Despite $25,000 budgets and 10-day shooting schedules, KBS pictures such as *Hotel Continental, The Death Kiss, Strangers of the Evening, The Last Mile* and *A Study in Scarlet* played major theaters that turned thumbs down on most independent product.

Burt Kelly – the "K" in KBS – had been a Paramount Publix executive in New York and had managed theatrical troupes on the East Coast. Bischoff was an independent producer-director during the middle 1920s and for three years was production supervisor at Columbia. Saal was a former theater booker from Dallas who had spent 12 years with Paramount. All three men came to Tiffany in 1931 – Saal as vice-president and general manager, Bischoff as a producer-director, and Kelly as representative for the New York home office. Tiffany, one of the many casualties of the Depression, was rapidly going down the drain as a producing entity and the studio was mostly a leasing lot for World Wide and other independent producers at the time KBS was formed.

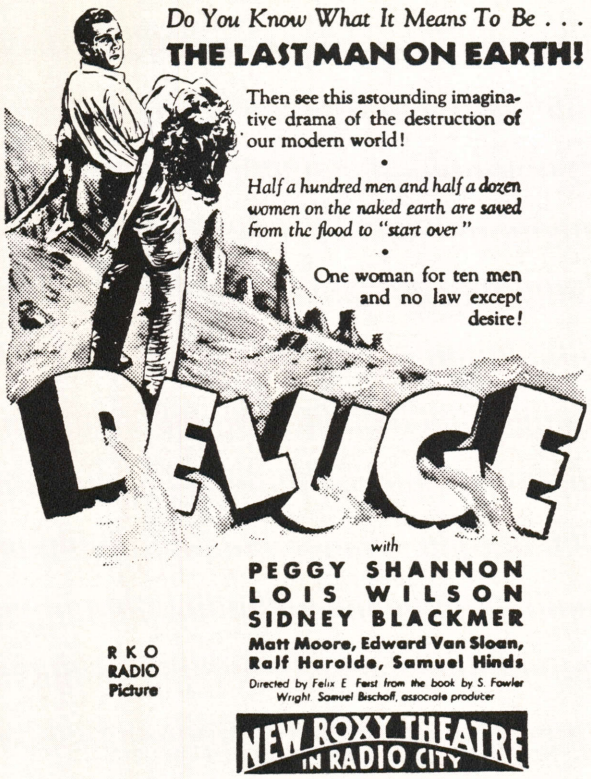
KBS utilized mostly up-and-coming young directors – their 1932 "discoveries" included first-time directors Edwin L. Marin and H. Bruce Humberstone – working under the supervision of the tough and wiry Bischoff. The technical crews, cinematographers excepted, were mostly Tiffany contractees, including film editors Martin G. Cohn and Rose Loewenger, art director Ralph DeLacy, sound engineers Corson Jowett and Hans Weeren, and musical director Val Burton. It is indubitable that the principal reason the KBS pictures had a more polished "look" than most of the rival independent releases is their consistent use of top-ranking cinematographers otherwise associated only with the major studios. During 1932 they secured the services of Arthur Edeson, ASC, for four pictures; Norbert Brodine, ASC, for two; Ted McCord, ASC, for all of their Ken Maynard Western series; and Henry Sharpe, ASC, and Ira Morgan, ASC, for one each.

In early 1933 it became obvious that World Wide also was headed toward dissolution. In an attempt to keep company and personnel intact, KBS established Admiral Productions and secured a contract to produce two pictures independently for RKO Radio. This was not an unusual procedure. Because of the high overhead costs of operating a studio, it was impossible for the major companies to produce pictures as economically as they could be made by the independents. Most of the majors handled a few outside productions under their own brands.

The Admiral-RKO deal called for the delivery of completed negatives of two properties, *The Big Brain* and *Deluge,* to be made at costs not to exceed $75,000 each. *The Big Brain,* a moderately successful psychological gangster yarn with Fay Wray, George E. Stone, Phillips Holmes and Reginald Owen, was made quickly and within cost parameters. It's remarkable that anybody who was involved on either side of the fence could have expected that *Deluge* – a film which had to depict the virtual destruction of civilization – could be brought in on such a tight budget.

Bischoff, aware that the picture would succeed or fail on whether the audience bought the special effects, sought out a specialist he had met when *Dirigible* was in production at Columbia: the now legendary Ned Herbert Mann. He learned that Mann was vacationing in the East. A telegram brought Mann back to Hollywood, the first member of the production staff to go on the payroll.

Mann, who was from Indiana, had studied to be an artist but worked at a number of professions – actor and director in vaudeville, professional auto racer and roller skater, and sculptor. He entered the movie industry as an actor but gravitated into the studio shops. While working in the plaster shop at the United Artists Studio in Hollywood – it had been the Pickford-Fairbanks Studio and is today the Warner Hollywood Studio – he began establishing himself as a "technical effects" expert (in the parlance of the time). He and Phil Whitman developed the extensive miniatures and flying carpet sequences for Douglas Fairbanks' *The Thief of Bagdad* (1925). Mann became the resident technical supervisor at the studio, directing special sequences for the various production units operating there including Fairbanks (*Don Q, Son of Zorro,* 1925), Joseph Schenck/Roland West (*The Bat,* 1926, *The Bat Whispers,* 1930), Howard


Do You Know What It Means To Be . . .
THE LAST MAN ON EARTH!
Then see this astounding imaginative drama of the destruction of our modern world!
Half a hundred men and half a dozen women on the naked earth are saved from the flood to "start over"
One woman for ten men and no law except desire!
DELUGE
with
PEGGY SHANNON
LOIS WILSON
SIDNEY BLACKMER
Matt Moore, Edward Van Sloan, Ralf Harolde, Samuel Hinds
Directed by Felix E. Feist from the book by S. Fowler Wright. Samuel Bischoff, associate producer
RKO RADIO Picture
NEW ROXY THEATRE IN RADIO CITY

Hughes (*Two Arabian Nights*, 1927), Samuel Goldwyn (*The Winning of Barbara Worth*, 1926) and others. He also freelanced on both major and independent outside pictures.

Mann never pigeonholed himself into one particular area but was concerned mostly with miniatures and full-scale mechanical effects. He was always "the boss." One major job was *Noah's Ark* (1929), done for producer Darryl F. Zanuck and director Michael Curtiz at Warner Bros. Working with cinematographers Fred Jackman, ASC, and Hans F. Koenekamp, ASC, he devised a miniature train wreck using perspective tricks and supervised titanic flood sequences for the Biblical section of the movie. Needless to say, this provided solid experience for the destruction of New York City in 1933.

Only after conferences with Mann about the handling of the catastrophe scenes did Bischoff select the other key members of the production team. Director Felix E. Feist, like some of his predecessors at KBS, had never directed a feature. He was only 27, but had grown up in the film industry, the son of MGM executive Felix F. Feist. He had been a newsreel cameraman and an associate producer of some of the Burton Holmes Travelogues. Since 1931 he had been director of tests at MGM nursing an understandable desire to graduate to features.

Norbert "Brodie" Brodine, a much in demand cinematographer, was, like Feist, a Columbia University graduate from New York. He had started as a teen-age assistant cameraman to Clyde de Vinna, ASC, and was a combat photographer in World War I. In 1919 – at the age of 21 – he became a first cameraman (director of photography) and subsequently worked – under successive contracts – for Goldwyn, Frank Lloyd-First National, Columbia, Warner Bros., Pathe and MGM. Brodine was noted for his skill at "glamour" lighting, which made him much in demand by the likes of Jean Harlow, Norma Shearer, Corinne Griffith and Ann Harding. He also was considered unsurpassed in his ability to simulate moonlight in night effect scenes. Bischoff found him available during the interval of several weeks between the last assignment on his MGM contract and the first call under his new contract at Universal.

Warren Duff and John Goodrich adapted the script from a successful first novel by the British author, S. Fowler Wright. Professor Wright abhorred the American adaptation, which he termed "nauseating." He always blamed Merian C. Cooper, who was in charge of production at RKO at that time but actually had nothing to do with the production of *Deluge*.

Mann soon had his technical crew constructing the gigantic miniatures on which the success or failure of *Deluge* depended. Edward Colman, ASC, and Harry Zech, ASC, were the cinematographers with whom Mann usually worked, but both men were occupied. He was able to obtain William N. Williams, ASC, who – like many of the visual effects cinematographers of that time – was a veteran of the Mack Sennett comedies. After 12 years of shooting some 60 pictures for the comedy master, Williams had learned all the camera gags then in use and contributed a few of his own. He left Sennett in 1929 to work for Multicolor Films, Inc., then Technicolor's closest rival, leaving in 1931 after owner Howard Hughes decided to invest elsewhere. Williams next joined fellow Sennett alumni Fred Jackman, Hans Koenekamp and Vernon Walker, ASC, for a stint at Stage 5, the huge special effects facility at First National. Mann secured his services after he left First National and before he checked in at RKO for a long stay as head process cameraman under the new camera effects chief, Vern Walker.

Another key member of the effects team assembled for *Deluge* was matte painter-cinematographer Russell E. Lawson, ASC. One of the top men in his highly specialized field, Lawson is best known for the many Universal Pictures for which he created matte shots during the 1930s and '40s. In partnership with Jack Cosgrove, ASC, he established a thriving independent matte service headquartered at Universal, which had first call on their services.

The catastrophe sequences in *Deluge* were rigged and photographed mainly in two separate operations. In the first, an earthquake devastates a large section of the city. The sequence was filmed outdoors. In the second, which was filmed on an indoor stage at Tiffany, a tidal wave coming in from the direction of Long Island crashes into Manhattan.

This huge cityscape appears to have been built on a quarter-inch scale, the tallest skyscraper standing approximately 12 feet high.

Smaller foreground buildings simulated an incredible 30 stories, the exaggerated design pointing to a somewhat futuristic look. As Mann correctly figured it, the bigger the miniature the better.

One of Ned Mann's few public statements was printed in the Brulatour Bulletin, a newsletter of the West Coast distributor of Eastman motion picture films.

"I have been associated with many splendid productions," Mann said, "and naturally I have learned something from every one of them. However, *Deluge* is the first picture I have ever worked upon where I have been given full responsibility with relative authority. I can't say enough in praise of Messrs. Bischoff, Kelly and Saal in appreciation of what they have done for me. They gave me the script and told me what they hoped to accomplish, and then turned me loose with full authority to spend money where and when I thought it was absolutely necessary, and not once during the entire production did they or any other executive of the studio interfere with me. True, they at times gave me suggestions which were valuable, and I was allowed to work these out without restriction.

"This is probably one of the largest, and certainly the most intricate, job of miniature work ever done in any production," Mann noted.

"Principal specification was for an exact replica of the city of New York, its waterfront and downtown district. An earthquake and tidal wave bring about complete destruction of the waterfront, ships, docks and the city itself, all with amazing reality.

"We spent as much money on the miniatures as the average program picture costs. Following construction, weeks of preparation and testing were necessary, naturally, because the destruction must occur in a matter of seconds, completely demolishing and destroying the structures and properties which we had taken months to build.

"For the earthquake effect on the skyscrapers in the downtown business district we built a platform of approximately 100 feet square, and this was cut into eight sections. Each of these sections was mounted on rollers upon separate undulating tracks, similar to a roller coaster structure. Springs were operated electrically to produce a desired effect.

"We took no chances in missing any part of the action from any angle. When the time came for the actual photographic and sound recording of this part of the picture, I had eight cameras on the set. The motors were started on the cameras and on the platforms. Slight vibrations developed into severe jolts and shocks. Sections of the platform separated, opening large crevices in the earth's foundation. The entire platform moves towards the cameras. The buildings shake and crumble. The destruction was as dramatic as it was complete.

"It must be realized that everything had to hit the first time. Here was one scene on which there could be no retakes without ruinous expenditure of money, because when the buildings and properties were demolished once, it naturally follows that a repetition would mean reconstruction of the entire set, which would take at least two months and which would call for the expenditure of many thousands of dollars."

Lois Wilson and Sidney Blackmer take refuge in a rock quarry. Photographed in Bronson Canyon, Hollywood. **Left:** ***After the flood Blackmer finds solace with Peggy Shannon. This scene was photographed at Lake Sherwood in Southern California.***

The eight cameras – Mitchells and Bell & Howells – were all adjusted by Edward Tiffany, head of the camera department serving California Tiffany, World Wide and KBS, to run at 240 fps. Billy Williams lighted the set and placed the cameras, which were equipped with lenses of varying focal lengths. Eleven operative cameramen and eight assistant cameramen were utilized.

Special effects men were secretive in those days, and Mann left much of the story untold. A few other details have come to light:

The earthquake prefacing the flood made for the most cumbersome and eccentric miniature operation in the history of special effects. On the side of a hill near a strip of California desert, Mann ordered construction of a series of tracks onto which were mounted eight automobile chasses – the bot-

Three frames from the motion picture show scenes from the earthquake sequence.

toms of car frames with the tires removed from the iron wheels. Each chassis provided a mobile floor for a section of the city.

The tracks were laid out in an irregular fashion on the steep incline, to cause the rolling miniatures to veer and bump away from each other. Parallel to this was another track for the camera platform, which rolled along with the miniatures at approximately the same velocity. The real sky served as the backing. Mann's idea was to film the action without drawing attention to a moving camera and allowing gravity to decimate the buildings invisibly. The structures were built heavily so they would topple realistically.

One problem was that the action had to be filmed at high speeds, and most high-speed cameras of the day had to be hand-cranked. The only recourse was to employ a large number of cameramen, whose job it was to ride the platform downhill and crank the cameras simultaneously. Once the action was recorded, the cameramen and the buildings would roll up an opposing hill and gradually come to a halt. Billy Williams was in charge of this hairy journey.

The earthquake was shot on a Sunday. Studio personnel and their families gathered to witness the event. Mann was shaking in his boots. The cameramen began cranking and each one raised a hand and yelled when his camera got up to speed. Mann fired a pistol so the operators on the trip mechanisms could hear it all at once, then the whole setup began its descent. What followed resembled a combination rollercoaster-bumper car ride at Coney Island.

According to Mann's associate, Phil Kellison, "The cameramen were yelling and bouncing around. Ned said that he never expected it to work so well! After 20 or 30 feet they reached the bottom and started rolling up the other side. Ned didn't realize how *heavy* everything was. The cameramen just fell off the track and the debris piled up on them! A big cloud of dust went up.

"But as the dust cleared, the cameramen yelled, 'We got it! It's okay! Ned turned on his heels, walked back to his car, drove into town – and got drunk."

The complexity of the work in *Deluge* is awesome, considering especially that it had to be done on a budget. Startling, for example, is a commanding aerial view of Manhattan as the flood waters enter the harbor, horizon and all. Pulling oddball tricks out of a hat was Mann's forté, as this singular shot testifies. Since it goes beyond the scope of Manhattan in miniature, experts believe that Mann had a huge photo blowup made of the city taken from an aircraft. On stage, the blowup was used as a backing as water from dump tanks enveloped miniature foreground docks. More than likely it served as a direct reference for the full-blown miniature construction.

Subsequent scenes of Manhattan crumbling to bits are vivid and unsettling, but not as realistic technically as they might have been. Mann had a penchant for making everything in plaster. All the miniatures in *Deluge*, including the docked ocean

Still photo shows details of the miniature set used for the earthquake action.

liners, were made of plaster without frameworks of any kind. Instead of disintegrating like honeycombed skyscrapers, the buildings tended to break in the middle and crumble like obelisks. Some shortcuts were taken, such as a less than statuesque Statue of Liberty which was built small for a quick cut as it is engulfed by the sea, and the encroaching tidal wave can not induce gasps. The New York footage, though, still packs a wallop and, in fact, is more eye-opening than the depiction of that city's similar fate in *When Worlds Collide* (1951), a Paramount picture that cost millions.

Because *Deluge* was made at little Tiffany, rear projection facilities were not available (the technique itself was still in its infancy), nor were major studios renting out such exclusive equipment to the independents. For the composite scenes of actors and falling miniatures, *Delugle* relied on Dunning traveling mattes, which by 1933 had fallen into disuse in favor of projection process. Although Dunning shots often suffered from density problems, some spectacular vistas of the day demonstrated the system's capabilities – to wit, the orphaned scenes from *Creation* and the log sequence in *King Kong* – and it was better suited to large scale action than the existing projection process equipment.

Deluge used the Dunning keys sparingly, with rewarding results. Scenes in a weather station showed Samuel S. Hinds and another actor peering out a window, aghast, at a collapsing skyscraper. Urban chaos was graphically depicted by scenes of pedestrians running amok with New York toppling like a deck of cards behind them. *Deluge* may be the only black and white film that actually showed the surreal tableaux that adorned the covers of contemporary science fiction pulp magazines.

Lawson's matte paintings were crucial in depicting the desolation following the catastrophe, expanding existing landscapes to include ruins, shattered trees and the eerie solitude of an all but dead world.

There are a number of optical montages showing the panic that precedes the catastrophe – radio men, ships, newspapers, frightened faces, ministers in their pulpits, trains, crazed mobs, etc. Flash shots separated by fast wipes and dissolves are similarly utilized to emphasize the frantic terror of the populace.

Live action scenes, miniature work, Dunning composites and stock footage of storm clouds and hurricane winds were beautifully assembled by film editor Rose Loewenger. Shots running from one foot to as much as 40 feet are juxtaposed. The miniature action, which includes an enormous variety of camera angles ranging from ground level to bird's-eye from varying distances, dominates. The inclusion of an occasional blurry, indistinct view adds a newsreel-like reality to the sequence, which begins in reel one and lasts into the third reel.

The entire picture is enhanced enormously by a musical score that is superior to all but a handful of scores from even the wealthiest of studios. It should be noted that the sparse bits of music heard during the main and end titles (and usually nowhere else) in almost all independent productions of the '30s was previously recorded material

rame enlargement n which live oreground action nd miniature arthquake footage vere composited via he Dunning Process.

supplied by specialists such as Meyer Synchronizing Service, International Sound Recording, and James C. Bradford Company. Deluge is scored completely from beginning to end, containing no less than 104 music cues, all but a few of which were specially composed. This was unique on Poverty Row.

Because of the time element, musical director Val Burton called in his friend, Edward Kilenyi, who was charged with assembling a cadre of composers who could work harmoniously and rapidly. Kilenyi, a Hungarian-born composer-conductor-violinist, was the father of the concert pianist of that name and was George Gershwin's long-time confidante and teacher. He was musical director of the Waldorf-Astoria Orchestra and New York's Colony Theatre during the 1920s, and composed original scores and cue sheets that went out with films to theaters everywhere. With the arrival of sound Kilenyi went to Hollywood as musical director for Fox Film Corporation, which maintained a large music department after their introduction of Movietone.

Kilenyi obtained the services of some of his colleagues from Fox: William Spielter, Peter Brunelli, J. S. Zamecnik, Samuel Kaylin, Rex Bassett, L. E. DeFrancesco, and Arthur Kay. All of these men contributed to the score, although it was mainly composed by Kilenyi, Burton, Spielter and Brunelli. Some published music by French and American composers also was re-orchestrated and worked into the fabric. Burton – who wrote musical revues in his native England and composed some popular songs such as "Penthouse Serenade" and "Singing a Vagabond Song" – recorded the music with a thirty-piece orchestra augmented by a cathedral pipe organ. The roar of the organ during the great flood scenes is (even with 1933 recording) wonderfully dramatic.

Needless to say, the proposed $75,000 budget had long since been absorbed, to the great annoyance of the RKO executives in New York. Particularly incensed was RKO president Ben B. Kahane, who expressed his displeasure to the Admiral group in no uncertain terms. The negative was delivered at a cost of $137,044. Consolidated Film Industries' bill for titles, opticals and release prints brought the total cost to $170,940.73, which was low by major studio standards but unheard of on Poverty Row.

The producers, mindful that the idea of a second flood of near-Biblical proportions was contrary to the religious beliefs of Christians and Jews, prefaced the picture with the following:

"*Deluge* is a tale of fantasy – an adventure in speculation – a vivid epic pictorialization of an author's imaginative flight. We, the producers, present it now purely for your entertainment, remembering full well God's covenant with Noah:

> *" 'And I will establish my covenant with you; neither shall all flesh be cut off any more by the waters of the flood; neither shall there be any more a flood to destroy the earth' – Genesis-9:11."*

The cataclysm is given a swift, but suspenseful buildup as scientists are baffled by an unexpected solar eclipse, falling barometers and reports of worldwide atmospheric turbulence. Gigantic earthquakes and unprecedented windstorms spread destruction. In rural New York, Martin and Helen Webster (Sidney Blackmer, Lois Wilson) flee their home with their two young children and take refuge in a mountaintop quarry. When Martin returns for supplies, earthquakes and floods separate him from his family and he feels certain they have been destroyed. Meantime, New York City, a mass of crevasses and crumbling buildings, is engulfed by colossal tidal waves.

Debutante Claire Arlington (Peggy Shannon), who had been preparing for a swim around Manhattan Island when the deluge struck, is found on a small island by two outlaws, Norwood (Ralf Harolde) and Jephson (Fred Kohler). Norwood attacks Claire but is killed by Jephson, an even more formidable menace. Claire swims away desperately, finally reaching another island, where she is rescued by Martin. As time passes, the two fall in love and live in comparative happiness in a cabin Martin has built near a mine tunnel.

Eventually they are discovered by Jephson, who has joined the renegade Bellamy gang. Claire is captured and Martin left for dead. Later, Martin rescues Claire and takes her to the tunnel. When the gang comes after them, Martin fights Jephson. Claire kills Jephson with a spike after he overpowers Martin. The Bellamy gang attacks, but is driven away by the arrival of a rescue party from the settlement of some 200 survivors which had thrown out the renegades.

Martin is astonished to find Helen and the children living at the settlement. He is torn

between whether to give up Claire, who is determined to remain with him, or return to Helen. After a tense confrontation with Helen, Claire dives into the sea and swims away.

At the opening there are interiors at the Webster home, at the U.S. Weather Bureau and in a scientific laboratory, all handled by Brodine in a straightforward manner. These swiftly become more complex as the destruction effects begin with collapsing walls and roofs, wind machines, and sudden changes of light. Intercut with miniature action, these scenes are brief in themselves and the live action soon moves outdoors. Much of what follows occurs in Bronson Canyon, a rock quarry in Hollywood which has been used in innumerable movies, and in man-made tunnels that had been dug long ago through a huge granite prominence in the center of the U-shaped canyon. Brodine achieves some fine pictorial effects, both daylight and night, in the photogenic canyon. Some terrifying chase scenes in the tunnels, limned with superior mood lighting, are highly effective. So are shots made in the desert as Sidney Blackmer plods wearily across a seemingly endless muddy plain.

It is undeniable that the incidents following the cataclysms are somewhat anticlimactic – the destruction of the civilized world is, after all, a hard act to follow. The fights and chases regain the momentum for a time, however, and the leading roles are played with charm. Blackmer, usually seen in villainous portrayals, makes the ordinary-man-turned-hero a convincing and likable character. Lois Wilson, a lovely star of the silent era struggling to re-establish herself in the talkies, performs well as the wife. Red-headed Peggy Shannon, who possessed a fine figure and an appealing Irish face, is an extremely sympathetic "other woman." A tragic beauty in the classic tradition, she was an alumna of the Ziegfeld and Earl Carroll stage shows and had played leading roles at Fox (twice opposite Spencer Tracy), Paramount and Warners – seemingly a certain prospect for top stardom at the time of *Deluge*. Her career plunged downhill in the mid-'30s, however, and after several years of playing small parts – including that of Robert Blake's mother in several *Our Gang* comedies – she died in 1941.

Other strong performances are those of Fred Kohler, one of the best brute-villains in pictures, and the dependable Edward Van Sloan and Samuel S. Hinds.

After a studio screening, Kahane angrily told Bischoff that he had not only failed to

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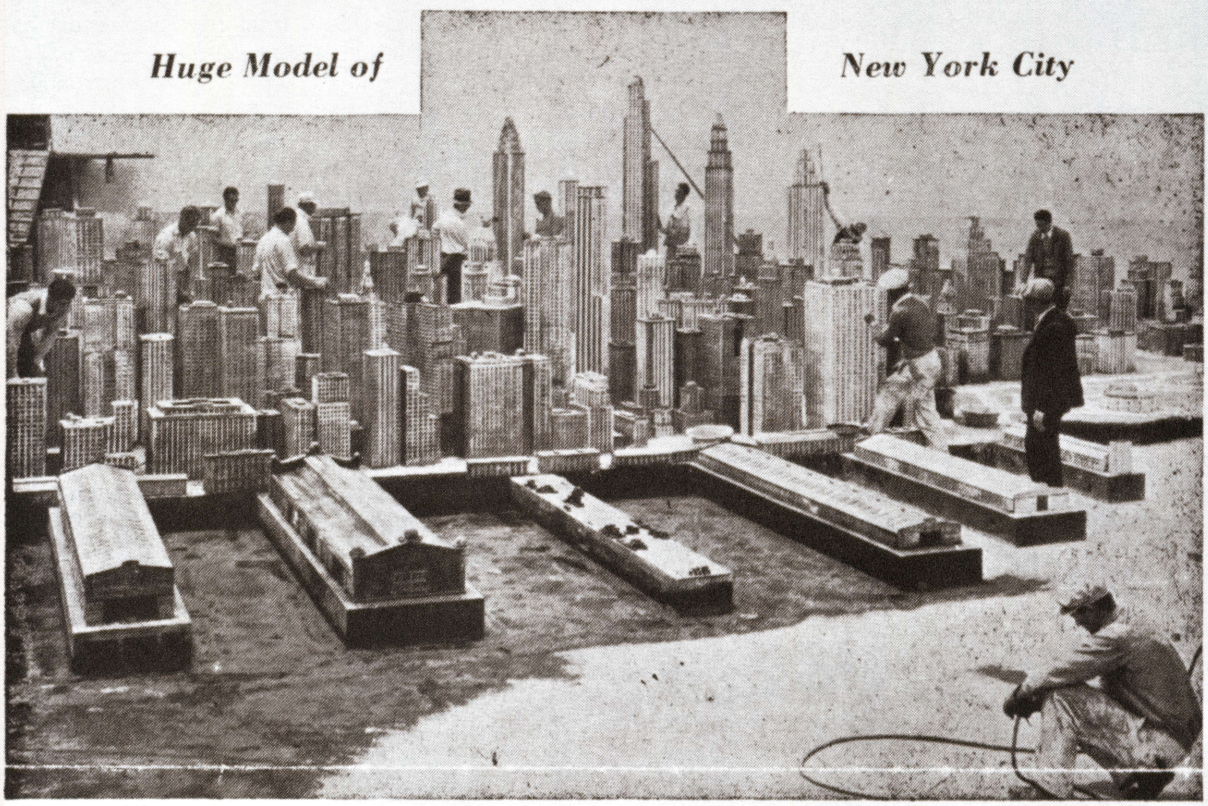
Huge Model of New York City



This huge miniature of the harbor of New York City was constructed for filmization of "Deluge." It is correct in every detail, and each characteristic of the impressive Manhattan skyline and harbor is authentically captured by studio technicians. This setting forms the basis for some of the most remarkable shots ever caught by the lens of a motion picture camera, insuring the sensational qualities of "Deluge."

This photo and text were sent to exhibitors when* Deluge *was released. At that time it was customary to keep audiences in the dark about special effects techniques. The man in the dark suit is Ned Mann.

Above: ***Relatively tranquil scenes in which Edward van Sloan (center) and his fellow scientists discover unusual atmospheric disturbances establish the expectation of disaster to come.*** **Right:** ***One of the many flash shots leading into the scenes of destruction.***

stay anywhere near what he considered a sensible budget but that he had sold RKO "a *bad* picture." Nevertheless, *Deluge* opened at the Roxy in New York on September 15, precisely five months after *King Kong* had taken that theater and the Radio City Music Hall by storm. The public loved it.

What film historians exhume today and marvel at was usually regarded as low-brow fare at the time of unveiling. The New York critics hated *Deluge;* "After the first reel of not-so-special effects, the picture goes downhill," said one acerbic reviewer. By-lining these *caveat emptors,* however, were the same critics who saw no grandeur in *Kong* and berated it as something of a honky-tonker. Unfortunately, it is the readily available New York reviews which have shaped the comments of modern writers, because the film itself has been unavailable for study.

The more down-to-earth critics from the trade magazines and West Coast papers felt differently. *Motion Picture Herald* called it a "thrill of a different, imagination-stirring kind. The romance is ordinary; the mechanical effects and excitement engendered by the disasters give it the novelty that predestines it as one of the most unusually spectacular films of the year." *Hollywood Reporter* headlined it as "A thriller; should make plenty money," with "a first half that will stand *any* audience on its feet and a latter half that is just fair movie." The cataclysm was described as "a marvel of miniature. The towering skyscrapers crumbling fearfully, the earth parting and swallowing up miles of debris in a great yawn, the huge gray battleships being flung by tidal waves into the heart of New York . . . this is what drew cheers from the audience. Ned Mann, who did the trick work on this, accomplished the impossible. The illusion is perfect, the whole effect one of the most startling and dramatic things ever seen on the screen. Exhibitors can bank heavily on this picture. It has what it takes to get them in, keep them entertained and send them home talking, which means more ticket buyers."

Photoplay cited "truly amazing catastrophe scenes" which, however, "dwarf" the love story which follows. *Variety Bulletin* said it was "a daring thriller . . . with such a wallop and with such an outstanding technical illusion that it should prove a positive draw . . . in its first sequences tops all previous shockers . . . Story gets away to a great start with swift pace and high suspense . . . Scene between Peggy Shannon and Lois Wilson competing for the husband climaxes the acting honors, with Blackmer and Matt Moore turning in fine performances . . . Picture is an outstanding contribution from the technical end, with Ned Mann, director of effects, and W. N. Williams as photographer of these illusion wizardries, sharing top honors. Musical scoring also is notable. General direction is adequate and Norbert Brodine's camera work is excellent."

The consensus generally was that the effects stole the show from the balance of the picture – an affliction shared by such descendants as *In Old Chicago, Earthquake, The Towering Inferno,* etc. After *Deluge* had grossed $250,000 (at a time when most RKO releases were reporting losses), Bischoff told Kahane, "You see, I'm not such a lousy producer as you think!" Kahane never forgave the remark.

Deluge was the last KBS picture. Bischoff went directly to Warner Bros., where he produced 77 pictures by 1940, including some Busby Berkeley musicals, *Charge of the Light Brigade, The Roaring Twenties,* and *A Slight Case of Murder.* At Columbia for five years he was similarly prolific, producing *Night to Remember, Texas, You'll Never Get Rich,* and many others. He was an executive producer at RKO for a year (*Best of the Badmen, Macao,* etc.), made *Pitfall* and *Mrs. Mike* for United Artists, and returned to Warner Bros. during the 1950s. He produced several TV series before retiring in the '70s.

Kelly and Saal continued to produce independently for RKO for two years. When Consolidated Film Industries founded Republic Pictures in 1935, Saal became executive assistant to Herbert J. Yates, president, and served for many years on the board of directors of both companies. Kelly became a producer at Universal (*Black Friday, The House of the Seven Gables*), then at Columbia (*Nine Girls, None Shall Escape*). Feist returned to the MGM shorts department as a director and writer of Pete Smith Specialties, Miniatures, Passing Parades, etc. Later he

Ocean submerges Statue of Liberty.

made a number of features, some of which showed a strong penchant for suspense, including *The Devil Thumbs a Ride, The Threat* and *The Man Who Cheated Himself.* He died in 1965.

Although Mann supervised effects for other American films, he gained greater fame in England during the 1930s-'40s, for the likes of *The Ghost Goes West, The Man Who Could Work Miracles, Things to Come, The Fallen Idol,* etc. His last picture was *Around the World in 80 Days.* He died in 1967. Williams (not to be confused with the British cinematographer) remained with RKO as an effects cinematographer, working anonymously on numerous productions. He died in 1976.

Brodine photographed some of Universal's top product of the mid-'30s, including *East of Java, Counsellor at Law* and *Little Man, What Now?* He later shot the three *Topper* pictures and other features for Hal Roach, including *One Million B.C.* and *Captain Fury.* At Twentieth Century-Fox he pioneered the style of lighting and photography of actual locations that created a new genre of documentary-type films with studio-quality photography, beginning with *The House on 92nd Street* (1946) and followed by *13 Rue Madeleine, Boomerang* and *Kiss of Death.* After returning from the Turkish location of *Five Fingers* in 1952, he devoted his time to TV cinematography, winning an Emmy for his work on *The Pearl* (1956). This remarkable artist died in 1970.

Although *Deluge* as a feature picture vanished from American screens by the mid-1930s, the catastrophe scenes lingered on as memorable highlights of several Republic productions. *S-O-S Tidal Wave* (1938), a feature about political corruption in what was then the "near future," utilized most of the destruction of New York footage. Two serials, *Dick Tracy vs. Crime, Inc.* (1941) and *King of the Rocket Men* (1946), reprised the great flood as the work of megalomaniac scientists who almost took over the world from time to time in those marvelous cliffhangers from Studio City.

Long regarded as a lost film, *Deluge* surfaced recently in a badly dubbed Italian print.

Paul Mandell currently is completing his book, The Grandest of Illusions, *for Alfred A. Knopf, Inc.*

Deluge
A Radio Picture

Produced by Admiral Pictures; *a* Kelly-Bischoff-Saal *production; from the book by* S. Fowler Wright; *directed by* Felix E. Feist; *associate producer,* Samuel Bischoff; *screen play by* John Goodrich, Warren B. Duff; *photography,* Norbert Brodine, ASC; *supervising editor,* Martin G. Cohn; *film editor,* Rose Loewinger; *settings,* Ralph DeLacy; *musical director,* Val Burton; *sound engineer,* Corson Jowett; *special effects directed by* Ned Mann, *photographed by* William N. Williams, ASC; *art effects,* Russell A. Lawson; *musical score by* Dr. Edward Kilenyi, William Spielter, Val Burton, Will Jason, Peter Brunelli, J.S. Zamecnik, Samuel Kaylin, Rex H. Bassett, L.E. DeFrancesco, Arthur Kay, William F. Peters, Van Norman, Werner Janssen; *additional music by* Beaton-Jacquemont, R. Guillermoteau, G. Knight, Alex-Fouget, Dessart, Petoit; *assistant director,* Eric Stacey; *second cameraman,* Harry Davis; *assistant cameramen,* Bert Eason, Johnny Eckhard, Carl Guthrie; *second cameramen for special effects,* Jeff Gibbons, Victor Scheurich, Carl Wester, Art Smith, Ernie Smith, Ernie Crockett, Harry Parsons, Reggie Lyons, Pierre Moles, Harry Davis, Fred Kaifer; *assistant cameramen for special effects,* Carl Guthrie, Leo Hughes, Rod Tolmie, John Echert, Bob Bessette, Bob Gough, Leo Ward, Dave Smith; *stills,* Roman Freulich; *sound technicians,* Hans Weeren, Alf Burton, Gil Pollack, Martin Jackson; *cutter,* Stanley Kolbert; *property master,* Charles Henley; *chief grip,* Robert Murphy; *electricians,* Al Cahen, Donald Donaldson; *camera technician,* Edward Tiffany; *production manager,* Tenny Wright; *titles and laboratory,* Consolidated Film Industries; RCA Victor *sound system; produced at* California Tiffany Studios; *running time, 70 minutes; released September 15, 1933.*

Claire, Peggy Shannon; *Helen,* Lois Wilson; *Martin,* Sidney Blackmer; *Tom,* Matt Moore; *Jephson,* Fred Kohler; *Norwood,* Ralf Harolde; *Professor Carlysle,* Edward van Sloan; *Chief Forecaster,* Samuel S. Hinds; *Survivor,* Lane Chandler; *Renegades,* Philo McCullough, Harry Semels, Henry Otho.

WINTER 1987\88

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Optical Mattes for Flight of *Superman*

by Ron Magid

Flying over Manhattan is a cinch for Superman – with help from the Ray Mercer technicians.

The Ray Mercer Company is justifiably proud of its contribution to *Superman IV,* and the task was far more involved than simply compositing blue screen elements and backgrounds. "We did 67 blue screen shots," notes Randall Weatherington, who manned the optical printer throughout the *Superman* project, "and of those, only half a dozen would be considered 'normal'. All the rest – the other 60 shots – had something else going on. A handful of them had the same foreground action but required different backgrounds. Many of our problems involved removing wires that passed right over the foreground. Including the bum takes and everything, I'd say I probably composited several hundred shots in four months – that's quite a feat. One day I did 16 shots, and another I did 18. On the average, I was doing five to eight shots per day. We'd have anywhere from three to twelve takes on any single shot and, for various reasons, especially on those hide-the-wire shots, we'd end up doing them all."

Despite the demanding four month schedule, the entire Mercer Company *Superman IV* crew consisted of four people. "Jeff Matakovich, who'd worked with *Superman*'s effects supervisor, Harrison Ellenshaw, at Showscan, defaulted to in-house optical coordinator," Weatherington recalls. "He did a lot of the rotoscope matte work himself. Brian Griffin, relatively new to Mercer and the industry, painted the mattes, lined them up and helped with the garbage mattes. Bill Aylsworth returned to us from Disney about halfway through the project and defaulted to lineup. He had to make sure all the elements were in sync, which was quite a task in itself, plus it was up to him to line up our count sheets and to print the mattes. I was the optical printer operator, so I was ensconced with the Oxberry the whole time. I also ended up printing some mattes early on – 1800 feet in one night!

"When we finally got into the compositing stage on the first roll, I was stuck on the printer from then on. The entire project was a tremendous team effort, and we all had to have our act together."

The Ray Mercer Company is certainly among the oldest – if not *the* oldest – optical effects house in Hollywood. In a frame in one corner of the busy effects facility some two or so dozen titles the company provided for 1930's Monogram sagebrush epics and PRC horror flicks like *White Pongo* attest to its longevity. In other frames on other walls, posters for films like the restored classic, *Metropolis,* a project the Mercer Company was instrumental in bringing to fruition, are eloquent reminders of the variety of work done here.

In order to remain on-schedule for *Superman,* the Mercer team had to make every

Christopher Reeve as Superman takes Jon Cryer and Gene Hackman for a ride.

effort to simplify the optical process. "Because our equipment is optimized for generating mattes and opticals, there was a twofold benefit," Weatherington explains. "The matte generation was reduced to the least number of steps, and because everything was built up on first generation mattes, it made the actual optical combination that much easier. I could take a matte and a separation, bi-pack it in the optical printer and go for it.

"Outside of the number of passes needed for the red, green and blue separations and the background, it was almost as simple as a title overlay. We were helped tremendously by having a registration contact printer dedicated exclusively to contact printing, so we weren't doing any contact printing bi-packing in the Oxberry optical printer. The optical printer was used for compositing while the mattes were being made on the contact printer. That's part of the assemblyline process that allowed me to do from eight to eighteen shots a day – I couldn't have done it otherwise."

At first, the initial batch of shots to be composited was rather small, but included amongst the more standard blue screen fare were some complex wire shots from which the obvious wires were to be omitted. The material was farmed out to a number of optical houses by the primary effects facility, Olson, and White, under the supervision of Harrison Ellenshaw, and Mercer wound up with the lion's share of difficult composites.

"That was a challenge," Weatherington says. "To hide the wires over the background, we'd re-matte in an empty background over the background with wires in it. The execution was somewhat difficult because after we removed the wires, we had to hide our matte lines too. We also had some shots where Nuclearman is carrying the Statue of Liberty that required re-matting in the foreground, which was somewhat more complicated. We were working with the tight closeups of him flying with the statue's hand, and we basically re-matted in the parts of the statue where the wires were.

"This sounds easy, but there weren't any clean shots of the statue and the whole shot was moving. What it really boiled down to was how to get those mattes and the blue screen mattes working together. They'd already created a matte shot with the basic blue screen, and now they wanted us to matte a matte shot! On some of these shots, we tried as many as half a dozen different ways before we clicked on something, but once we clicked, everything just fell into place and all the similar type shots went right out and they loved them. Olson, Lane and White considered these the difficult shots because of the wires, and they really liked the way we handled the situation. When we were through, it looked like the same shot, only the wires were missing and you couldn't tell there had been wires there to begin with.

"Another problem involved elements that were originally shot on VistaVision and reduced to four-perf anamorphic – in the reduction process, they would bring the sides of the image in slightly so they came right up to the camera aperture markings, which were not necessarily the edges of the frame. On the left side where the soundtrack went, there was no problem, but on the right side where it goes all the way out to the edge of the frame it was cut in a little bit, so there was a big white bar where there was no image.

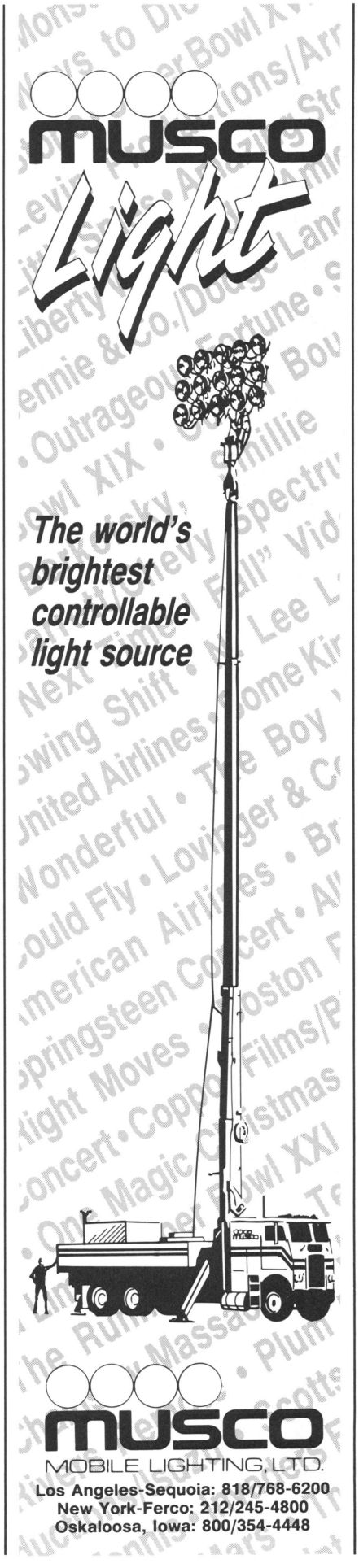
"When I could see a shot like that coming I would blow it up slightly, but there were times where I'd get all my separations on and it was only after I'd get the background in there that I'd find out I had a problem. When that happened, I'd very carefully place a razor blade on the aperture movement right up to the edge of the image so it would black out rather than white out there. Even though it was just outside the projection aperture, it might've been far enough inside to cause a slight edge flare to the image. Obviously, I would have preferred to have image all the way out to the right edge of the aperture, but it wasn't always possible."

In some cases, Olson, Lane and White were only able to supply part of the material necessary to achieve the final composite, as in the case of a flying disc bearing Nuclearman's likeness – an effect which, sadly, was cut from the final film. "All we had to work with was the interpositive," Weatherington remembers. "We didn't get any mattes, so we had to print back from the IP to make our mattes. The missiles were basically balls shot with a motion control camera and streaked, but there was black velvet draped around them which could sometimes be seen in the shot, so we had to make a low density holdout matte that would add to the blackness of the velvet in order to remove it with our final low density matte. We actually managed to accommodate all of that and build it up on one matte. The real problem was a tight fit – the mattes had to be fit back to the IP, and we sometimes found that within the mattes themselves there was a slight mis-registration. It was just a smidgin off, but basically, we're perfectionists. Alas, the shots weren't in the film."

Another sequence missing from the final film was one of the most challenging composites the Mercer Company handled on *Superman IV,* a shot in which Nuclearman emerges from a fiery comet when he first enters the Earth's atmosphere. "The fireball itself was an animated element supplied us by Olson, Lane and White. It was another of those elements that had to be reduced to fit, but it worked. There was one blue screen shot in which they flew Nuclearman through a no-light situation so he appears silhouetted and on through simulated sunlight. When the two shots were composited with the animation, the idea was that it would appear as if Nuclearman were emerging from the fireball into the light. It's a lucky thing that we had the silhouette matte to preserve the orange color of the fireball over the matted area, otherwise the animation would have just wisped out white and washed out in the light sky. We were afraid the effect wouldn't work, but we did it in only one take and it knocked us all dizzy."

Not every shot the Mercer Company did for *Superman IV* was cut out of the film subsequently. "As I understand it, the tornado sequence was already out of the film when we got the shots," Weatherington says, "but Harrison wanted us to do the shots anyway in the hope that he could get it back in the film. It was a blue screen nightmare because it involved a little farm girl with wispy blonde hair falling through the air. Wispy light blonde hair is probably the worst subject matter you can put in front of a blue screen – next to a glass of water. She's supposed to be falling, so she's spinning around and the fan is blowing her hair all over the place. This is the type of subject where you get fringing just like that, light hair is disturbing the purity of the blue. We were able to come up with mattes that not only showed the hair but which didn't block up as blue fringing tends to do. We had to do some brainstorming to come up with a way to build the mattes up, and a lot of it boiled down to getting the right density in the holdout matte without it getting so thin that you could see through the girl. Unfortunately, it was a case of 'too little – too late' and it didn't end up in the film."

Fortunately, most of the Mercer Company's work is present in the finished cut of *Superman IV.* Among the simplest but most often employed shots enhanced were those in which Superman or Nuclearman fly from infinity towards camera until they fill the entire frame, or vice versa. "These were tracking shots that we enhanced on the optical printer," Weatherington elaborates. "They had only so much track and so much room on-stage to do these in-flight shots. The shots called for more



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range, they really wanted them to trail off to infinity, so we added zoom to each shot on the optical printer. To again reduce the optical process to the lowest common denominator, we wedged our dupe negative so the blue screen values would read the same as the original, and that way, we could just cut our negative right in the roll with the others and print all the separations simultaneously at their respective lights."

Another relatively simple yet effective series of composited shots comprise a sequence in which Superman and Nuclearman fight it out in outer space. The Mercer crew had to composite each shot in the sequence three separate times using three different backgrounds and they had to add Nuclearman's sizzling bolts of electric current as well. "Of the three backgrounds we use," Weatherington recalls, "one looked real hokey, one didn't have enough stars, and then they finally found one with just the right number of stars in it. As for the electricity, we simply burned it in over the scene in two passes. The first pass was for the hard core which gave the actual shape to the electrical charges themselves, and the other pass added some heavy diffusion to create a glow. The real challenge was matching the glow color and the core color with those in other shots done by other companies."

The Mercer Company also handled a number of non-blue screen matte shots involving miniatures, as in the case of a sequence in which Superman hurls a huge netfull of nuclear missiles into outer space. "That was basically a straight matte shot," Weatherington says. "There was a tiny model of Superman attached to a bag made of rigid wire, and they just spun it around. We got mattes from Olson, Lane and White to hold that out, so it really was a simple matter of matching it all up. We did have to go back and rotoscope the mattes to improve the edges because there was some chattering. Jeff Matakovich did the rotoscoping for those mattes, and the final product looks real good."

Of all the shots the Mercer Company crew composited for *Superman IV,* that in which Superman flies around an erupting volcano is unquestionably the most complex, involving a matte painting, a blue screen shot of Superman, flowing lava elements and more. "It was a multi-element shot," Weatherington affirms. "The volcano itself was a matte painting with smoke and the sky matted in, but they thought the sky looked too dark, so we had to make an element for the sky itself. They supplied the matte but it was one of those photostats, so I had to reduce the matte and make another one so it would fit 1:1. We ended up having to make two passes on the sky to lighten it up, so it was a double exposed sky.

"Not only did I have to make mattes for the sky, but since Superman passes over the sky and in front of the volcano, I had to hold him out over all the different background elements. There was also an extra little flow element added at the last minute to enhance the lava, and then I had to come back and put in the separations of Superman, so we had four passes on the holdout mattes just for the background, and then three more for the separations. In addition, this was one of those tracking shots on Superman where we zoomed on the zoom, and it was a reposition! We had to use the motion control computer to track Superman in an arc as if he was going around the volcano, so we took the blue screen footage, started Superman in a 1:1 position at the edge of the frame and took him around in a little bit of a curve. This was a very complicated shot which I had to redo about three times as they kept adding elements."

The true secret of Mercer's success? Says Weatherington, "We gave them Chateau Briand in an assembly line situation." △

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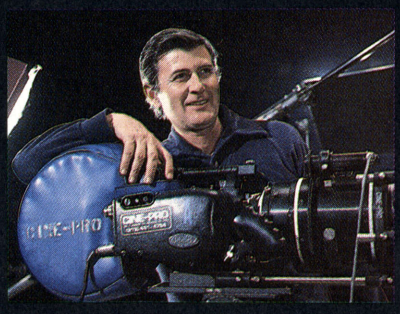

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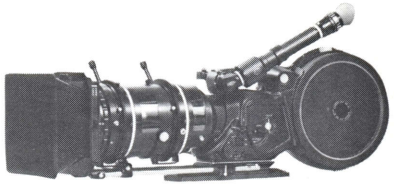

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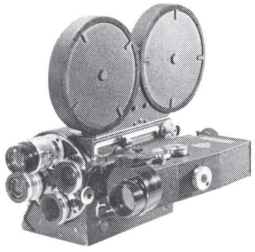

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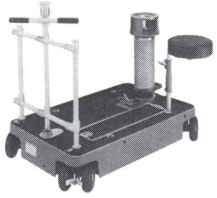

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Photos by Andy Schwartz

Wall Street
Another Part of the Jungle

Produced and directed by Oliver Stone
Bob Richardson, director of photography

by Brooke Comer

Given his background as a youth who recorded weddings with his Sony video camera, and as an oceanography major at the University of Vermont, Bob Richardson should rightly be a videographer, or at least make films like *Jaws*. But if he is known for any special forté in the industry, it's his ability to convey brutal realism, as seen in *Salvador* and *Platoon*, both scripted and directed by Oliver Stone. "So I'm also known as a young cameraman who does Oliver Stone pictures," Richardson laughs.

Though now, having completed another Stone picture, *Wall Street*, the cinematographer reveals his talent for lighting interiors, and stylizing a less than rugged terrain.

How did Richardson achieve the transition from oceanic studies to filmmaking? "The truth is, I never much liked my oceanography studies," he confides. Nor did he have any deep affinity for the geology minor he tacked onto his curriculum. Growing up in Woods Hole, the famed oceanographic institute in Cape Cod, inspired his love of the sea. But Richardson came closer to his true calling when he left the university after two years in favor of Rhode Island School of Design's film department. That program steered him toward the American Film Institute, "where you do video your first year and if you're in-

vited back by a director, you spend your second year shooting a film." Richardson did two second year films. "I had nothing else to do, no other work," he states. But the contacts he developed at AFI won him work shooting documentaries, which no doubt helped him to establish a sense of realism. Then fate intervened. Richardson met Oliver Stone.

Richardson calls his union with Stone a star-crossed situation. "Oliver had gone through everyone there was," and when the two met, "it was a meeting of instincts." At that time, Richardson's credits were hardly impressive. He'd done second camera on such films as *Electric Bugaloo, Nightmare on Elm Street,* and *Breakin'* as well as some re-shoots for *Repro Man.* But Stone took a chance on him. "He told me not to take any other work, that the job was mine." One film led to another. Stone had no qualms about taking Richardson from the jungle to *Wall Street.*

Wall Street, formerly entitled *Greed,* is based – not surprisingly – on the sizzling scandals perpetrated by insiders of New York's high powered financial center. You could say it's just another jungle for Richardson. Brutality in a three-piece suit.

Richardson, having shot *Crossfire,* a documentary filmed on location in El Salvador, was ripe for the job of shooting Stone's *Salvador.* He calls that first project "a turning point, the beginning of the cycle."

Salvador established Richardson in the docu-film genre. Other young visionaries, who embarked on their careers with a Sony in hand, stayed in the tape domain, waiting for high definition to push video to the big screen. But his video experience gave Richardson a keen sense of visual composition and movement, that ability to capture a particular aesthetic that still photographers-turned-cinematographers tend to bring to their trade.

"Video is too clean," says Richardson. "It's a whole different texture. Grain seems important to me for some reason." He supposes that video will take over at some point, and admits that it's good for independents. "A man in San Francisco shot an independent film with an Ikegami, using only one tube, red or blue, then blew it up to 35 millimeter. It cost a fortune, but it made for an interesting visual." His experience with video's window-like cleanliness no doubt fostered in Richardson the verité look he's known for capturing.

It makes Richardson a bit nervous to be tagged as a "docu-type." Richardson tried to break away from his typecast in *Platoon.* "I tried to maintain realism, but at the same time alter it. They're saying, 'yeah, he can do exteriors. But can he do interiors?'" Wall Street is all interiors. An indoor jungle, where savage and violent tactics are

Opposite Page: ***Douglas and his apprentice Charlie Sheen in Wall Street office.*** **Top:** ***Darryl Hannah and Sheen.*** **Below:** ***Sheen and James Spader in critical scene.***

Crew photographs Charlie Sheen. Richardson is in foreground with camera on dolly track.

conducted on a mental, rather than physical wave length. "Wall Street is going to alter the idea that people have about me as a cameraman," Richardson predicts, "though it still links me with Oliver Stone."

Loyalty guides Richardson's selectivity when it comes to taking jobs, and he likes to work with Stone. "I feel the relationship with directors is the most important thing. You can only be as good as the director and the script you have. If you're lucky enough to find a director you can work with, and there is a mutual rapport, you want to continue that relationship and you'd better do everything in your means to keep working with him. If it means giving up a lot of time, that's the price you pay. At some point, you walk away from it."

Richardson doesn't like overly polished images. His stylistic preference runs toward a more distinctive style; "I'd prefer to see a Francis Bacon painting than many other types of art." He also likes the darker side of the images he sees. "Wall Street doesn't have violence, but it does depict the darker side of human nature." The film, which takes place about a year and a half ago, deals with the influence of money and the corruption of the spirit. A young Wall Street broker, played by Charlie Sheen, becomes close to another, successful broker, played by Michael Douglas. Douglas uses the former to attain certain goals. As Sheen becomes more successful in assuming Douglas' persona, his soul begins to disintegrate. The black-and-white, good-and-evil forces that fluctuate to compose the human moral condition, hardly differ from one jungle to another – but at least Richardson's ability to convey indoor "evil" is now put to the test.

Even though Stone was fully in control of *Wall Street*, Richardson was ready with plenty of input for each scene. He always prepares for a film by doing his own storyboard from the script. "It's not necessarily used by the director, but it's very helpful for me," he explains. "I can familiarize myself with what I'd like to see through an entire picture." It takes Richardson about four weeks, depending on his concentration span, to compose his little figures in ghost-like pictures. He admits it's hard, "because you're not getting a director's feedback on positioning. But it helps me to internalize the film." Richardson got more freedom on *Salvador*, when the hand-held camera "just naturally suggested ideas." *Platoon* necessitated "a great deal of preconception from both Oliver and I." But in working on *Wall Street*, Stone took over. He knew exactly what he wanted. The two talked about color, movement and concepts, and Richardson's board "got sent right out the window." Still, storyboarding remains a central route that Richardson intends to keep taking. "I'd feel naked without it," he adds.

One of the advantages of working with the same director is a kind of continuum that lets a cinematograpaher move forward from ideas and concepts initiated in a previous film. In *Wall Street*, for example, Richardson played with some of the notions he and Stone conceived in the making of *Platoon*. "We altered scenes, changing the colors of windows, for example, to take on a more golden and stylized hue." Richardson used color to denote the psychological perception that Sheen has of Douglas. "I'm sure people will say it's too stylized," says Richardson. "It's certainly not the kind of realism that people expect from an Oliver Stone film. But at the same time, I think the light looks quite realistic, with the use of certain color tones."

Not only colors, but camera movement lend to the mood and foster sensation in *Wall Street*. Richardson made sure that he used plenty of camera movement when a scene revolved around money. "We'd set a pattern for a move, but determine height, lens length, and camera position almost at the time we were shooting it," he reveals. Thus whenever money was involved, shots would become hard cuts, roughened by off-balance moves, with a constant sense of instability, "almost like a fish in a feeding tank," says Richardson. Scenes featuring Sheen's father (played by Martin Sheen) are shot from a lowered camera position. "We brought things down, lowering the camera angle to an almost child-like eye level, and added static frames, for a more classic type of composition." This moody, more standard style film-making was designed to "make you feel you weren't always in motion," says Richardson. "That's what we played with."

Even though Richardson credits much of the inner turmoil that the film conveys to excellent acting skills, the golden hue that he gave to Sheen's vision of Douglas helps. "It's an overwhelming power, a notion that everything is dictated by the material things one possesses," Richardson adds. That's why he gave such care and attention to the lighting of the windows on the 30th story of a Wall Street trading floor. "We laid 85 gels on the window, then lit with daylight inside," he explains. "With HMI's, the 85 converts the light to tungsten, just as if you put it on the lens. The change looked as though I'd put a yellow filter over the windows." Richardson brought down the exposure so that the buildings outside on a bright, normal day, were brought right on top, "it was extremely gold and very pretty," says Richardson. But it was a huge statement and I was very nervous about it."

During the two days it took to shoot the scenes with the golden windows, it would have been hard to go back and reshoot. Richardson's goal was to shoot Sheen so that he "changed," as involvement with Douglas increased. As Sheen's world alters, the windows take on a warmer hue. Richardson accomplished this by changing the windows from one quarter 85 to one half 85, then to full 85. "Then I brought the exposure down using neutral density filters in the windows so as to increase the density of the yellow, so it wouldn't get burned out and lighter." He also changed the color temperature of the HMI's so that as opposed to "just being daylight, I made them warmer than daylight. Using them in combination with the 85's in the windows, the light would pull out half the gold from the HMI's."

One of the most obvious challenges Richardson had to cope with in shooting *Wall Street* were the real locations. The whole window lighting situation could have been handled with less risk and greater control indoors. "The production director preferred to use a studio," Rich-

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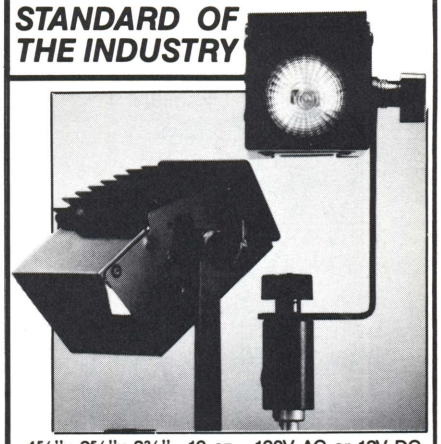

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ardson notes, "but I didn't." Even though real locations are hard to find in New York, and despite the time crunch the shooting schedule was under, to finish before the director's strike, Richardson thinks that the real locations have a positive impact on the quality of the acting. "If you're sitting 30 stories up on a trading floor, you can't just go and sit in the back somewhere and smoke cigarettes, as you might do in a studio. You have to sit on the set, you can't relax. I think it helps everything to roll." Stone apparently, agrees.

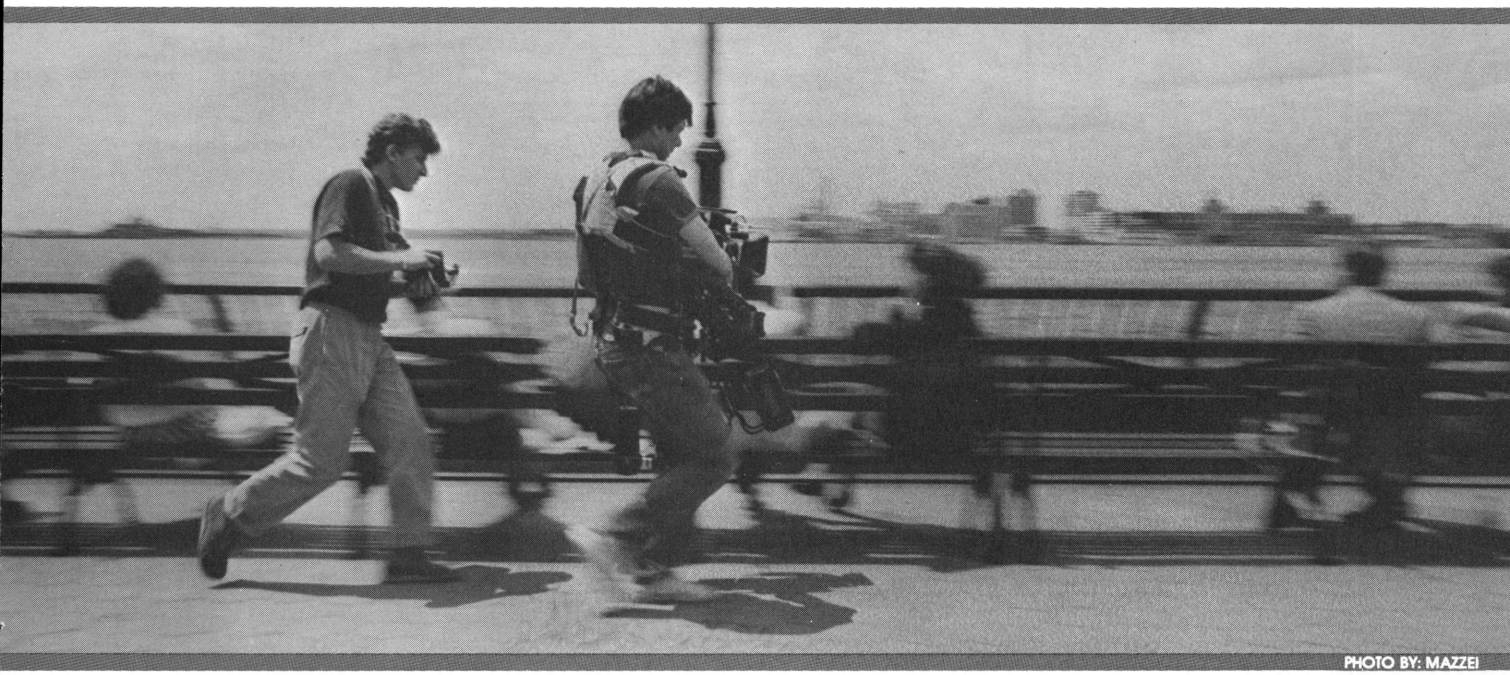
One of the risk factors, of course, in the Richardson/Stone notion of location reality is inclement weather. "We had some windows which were 10 feet tall, and as light changes direction from morning to afternoon, the light would influence the color in a room," Richardson sighs. Working in a room with no light, the ambience would be down, then by midday he'd have a stronger ambience and by two o'clock, shafts of light would break through a room. "But I was fortunate weatherwise," he points out. "If we had hard light, we'd try to shoot those shots at that time." But since hard light was rarely in demand, when it started to pour in, he'd have to cut it out and work on tighter shots, to avoid "an overlap." He admits that doing all the lighting from inside was difficult. "We had to try to hide lights and still get big moves, 240s and 180s."

A seasoned crew not only aided Richardson with his lighting problems, but gave the young cameraman an all-around feeling of confidence. "We had one of the better crews in New York," he explains. "They protected me. Here I am, after all, with four films under my belt, with crewmen who'd done 50 or 60 films." The agile talents of key grip Mike Miller were put to work, when dolly shots were required. "Mike was willing to take chances on a dolly," Richardson notes. "We had moves hundreds of feet long, and we needed a smooth floor. The floor we were working on wasn't as smooth as we'd hoped, but Mike was willing to work on it, even if it was a bit bumpy."

"We stayed pretty standard with lenses, using high speed super to super speed from Zeiss, 18 to 135, then Cooke 5 to 1 and 10 to 1." He didn't use any filters, simplicity, perhaps, being part of his forté, a holdover from his independent, documentary days. One departure he took from his past was the use of Technicolor labs. "Coming from an independent background, I was hesitant to use them. It was a big break for me, like getting married. But I got married. I used Technicolor, and I became very close to them. I think 50% of the picture's quality is affected by the lab, and you have to work hard to keep up that quality."

Richardson, whose most recent thrill came from attending the Academy Awards, "because I got to meet people I had tremendous admiration for, like Vilmos Zsigmond," has only begun to focus – literally and figuratively – his talents. Now that he's made the jump from fear and loathing in South America to like conditions in downtown Manhattan, he may shed his reputation for depicting brutal realism. But typecasting isn't bothering him right now. People may classify him as they will. "I'm young," Richardson reflects. "It's understandable." △

RICK RAPHAEL



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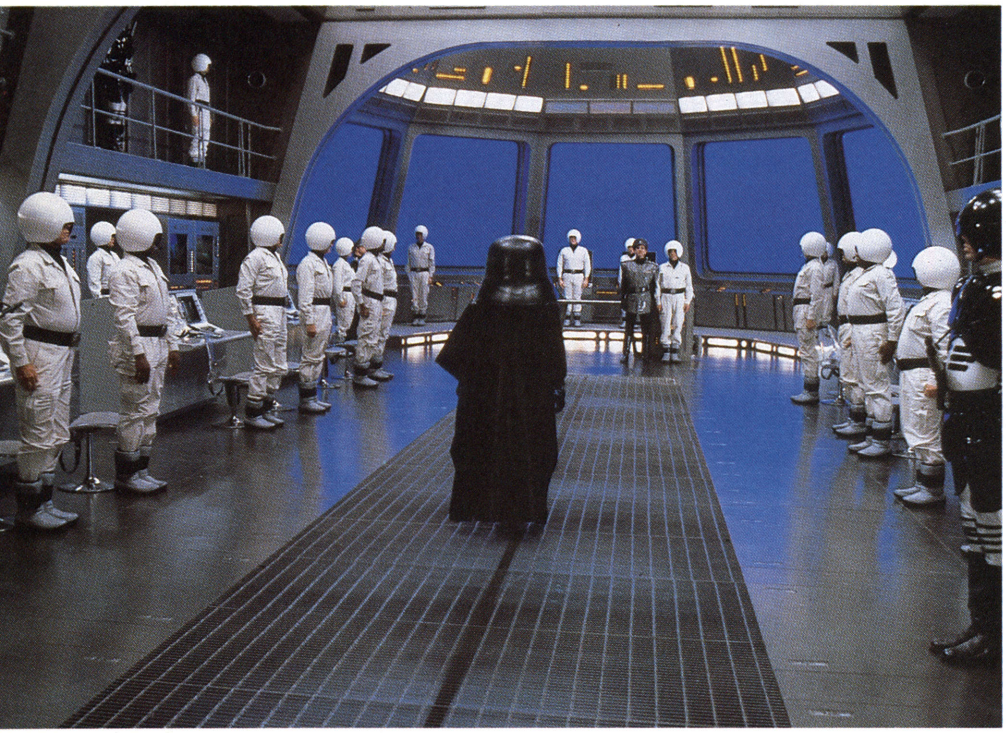
Satirical Effects for *Spaceballs*

by Ron Magid



Rick Moranis aboard Spaceballs cruiser control center. Screen was lit with panels of 24 fluorescent tubes.

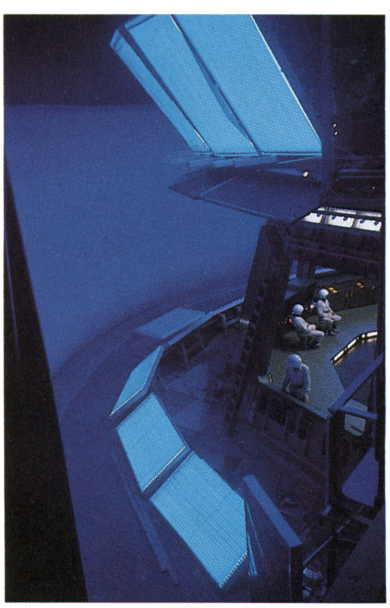
Spaceballs, Mel Brooks's spaced-out satire of the science fiction genre, is undoubtedly the fine comedic director's most technically challenging film ever. No one has ever made an outright science fiction comedy before, and one thing is certain – whether it succeeds or fails as humor – from a visual effects standpoint, everything has to be perfect.

Brooks promised to deliver *Blazing Saddles* in space, so to fulfill his epic vision, he selected Peter Donen, a visual effects supervisor who worked on *Superman, Outland* and *Altered States*. Donen strove to help Brooks achieve the perfection he demanded, while also keeping the director aware of the cost of his gags.

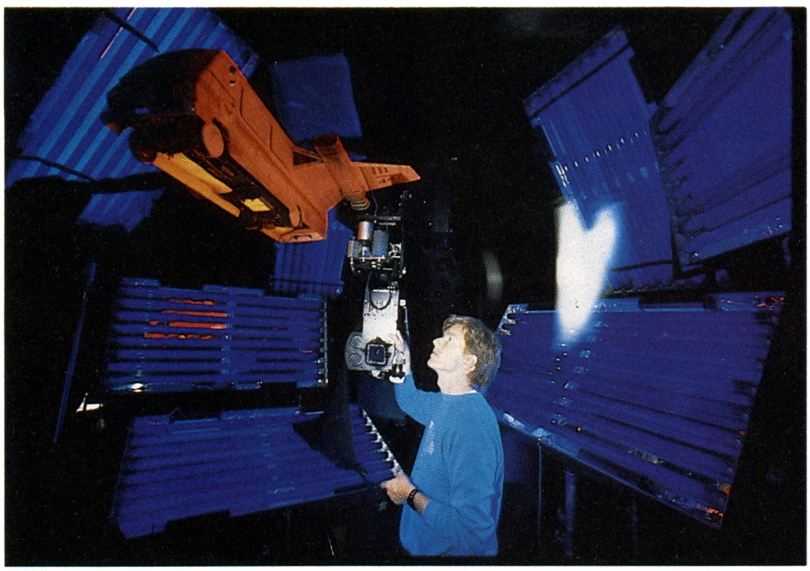
"Eventually, we broke the effects down into two basic categories: those that were plot line shots, like a spaceship flying from one place to another, and those that were strictly for laughs. We looked at each of the joke shots and asked ourselves, 'Is this a $100,000 or a $10,000 joke?' These were the decisions that Mel had to make. Some of the jokes were even simpler to do than Mel thought, so he'd say, 'Great, let's do two of them!' There were some that were more complicated and more expensive than he thought, and he'd say, 'That's not a $50,000 joke, it's only a $25,000 joke. If you can figure out a way to do it for $25,000 we'll keep it in the movie, otherwise lose it."

While the effects budget was still up in the air, Donen tried to bring some elements of what promised to be one of the largest projects he'd ever worked on down to Earth. Nearly a year before the release of *Spaceballs*, therefore, Donen had selected Grant McCune, Apogee's chief modelmaker, to create the miniatures for the film before he'd made a determination as to which effects facility would actually handle the special effects chores.

"In June of last year," Donen relates, "we knew that our release date was to be sometime in early summer of 1987, which meant that on or about September 1, 1986, we had to be going almost full guns in order to get the 150 odd shots we had scheduled at that time into the picture. We had the greatest confidence in Grant McCune and the modelshop at Apogee to handle the miniature construction, but we hadn't yet decided whether to set up a facility of our own or to hire an



Photos by Peter Sorel and Michael Middleton



existing effects facility to handle the huge workload. We felt if we decided to do the effects in-house that we'd lose a lot of sleep over it, so it came down to Apogee. They were already building the models, and they had a lot more *Star Wars*-type experience than the other companies we looked at. In the end, everyone concerned felt more comfortable keeping the work here at Apogee."

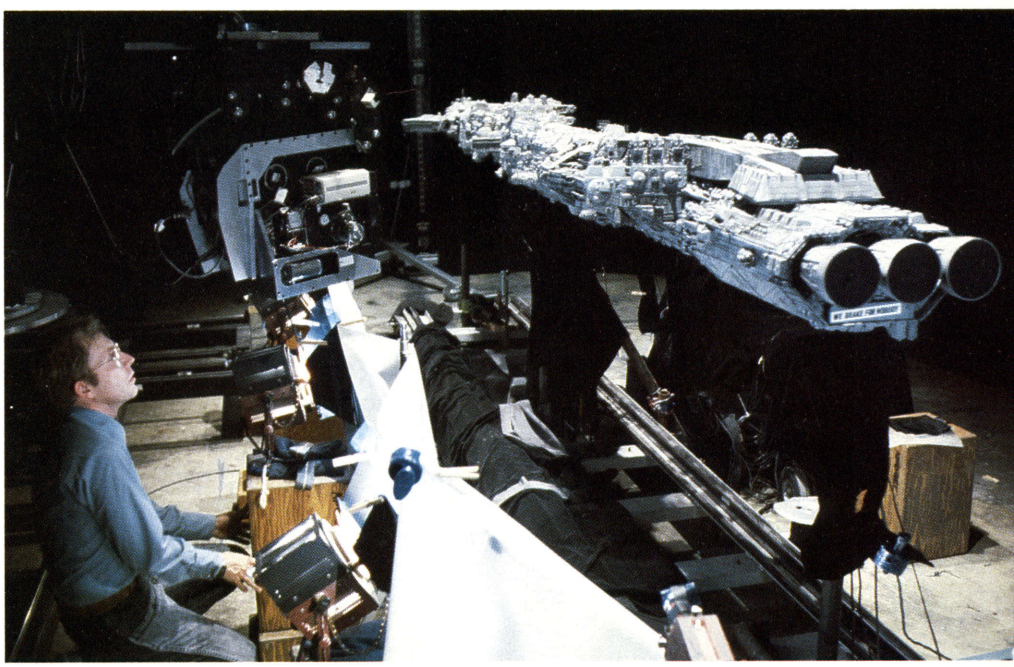
As everything about the *Spaceballs* production was already leaning towards the unconventional, Donen decided to continue in this vein and begin effects photography prior to the commencement of principal photography. "This was fairly unique," Donen explains, "we began about a month before principal photography had started, so the sets weren't finished at that point. Originally, we were only to concern ourselves with the most basic things like spaceships flying by, at least that was the theory at the time, but what happened in practice was that once we started, we were committed to going down that road. Although we were mainly handling the non-live action footage at that point, we forged right ahead and once they started into full production we started shooting our composite plates on three stages at Lorimar."

The man responsible for insuring that *Spaceballs*' effects came in on-time and under-budget was special visual effects producer Percy Angress, who compares working on effects pictures to giving birth: "There's a nine month gestation period for special effects," he jokes. "My job during that period was to make sure that Donen got what he needed to do the effects properly.

"One of the advances we've made," Angress enthuses, "is to hook up video camera via taps to our motion controlled motion picture cameras. Using this new technology, we can take a move that we've programmed on stage and play it back on a video monitor in real time. With motion control, a five second shot on screen can take five minutes to shoot; the video process gives us the capacity to view these shots almost instantly. In the past, we've shot black and white film tests, so by the time we shot a move, processed it and viewed it, there was a 30-minute turnaround. Using the video tap, we can now refine our motion control moves much more quickly and smoothly."

Before the motion control cameras could roll however, indeed, before the model shop could build any of their models, visual effects art director Steven Dane had to translate production designer Terry Mars and art director Harold Michaelson's two dimensional spacecraft designs into geometric, three dimensional architectural realities. "I was called in around the beginning of September,'86," Dane says, "and I began taking the initial concept sketches from the production designer and turning them into blueprints for something we could make."

Most difficult of the craft Dane had to blueprint was the immense Spaceball Cruiser, whose tremendous proportions required dozens of blueprint sheets to



Above: ***Cameraman Doug Smith prepares shot of the Eagle V during a red matte pass under ultra-violet lights.*** **Below:** ***David Hardberger adjusts light on cruiser on stage at Apogee.***

Above: ***"Tree drop" sequence staged at Apogee.*** **Below:** ***Donen oversees set for sequence.***

guide the modelmakers. "I broke the design down into certain manageable geometric solids," Dane remarks, "and I had to anticipate it coming apart for shooting with individual sections as well as for the transformation." Not only is the Spaceball Cruiser, at 17 feet long, one of the largest models ever built, it also had to be capable of transforming into the sinister Megamaid, a Deathstar-sized mechanical housekeeper complete with vacuum designed to suck all the usable oxygen from the planet Druidia and transfer it to the planet Spaceball. "The entire design of the Cruiser is based on a massive 4½" diameter tube that became the spine of the ship. I had to make sure there would be room in there for the neon tubes and fiber optics which give us all of our gleaming lights. Essentially, I designed the bones and added the first layer of skin, which is flat, and then the modelmakers create the surface excitement, the definition of the guns and the surface detail."

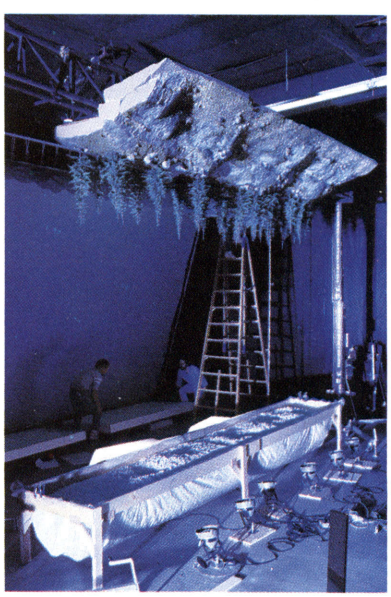
"There was an incredible amount of detail," chief modelmaker McCune moans in mock agony, "so much so that I never want to see that much detail ever again! But that's what makes it funny – it's the epitome of all the modelmaking that's gone on since *2001*."

Aside from the obvious problems associated with maneuvering a 17-foot long model on stage, the major problem that McCune and his crew faced was convincingly transforming the Spaceball Cruiser into Megamaid. "The metamorphosis was really difficult," McCune affirms. "We shot for a real simple solution, figuring that since it was a comedy, we could get by without too much technical scrutiny. Even though the proportions of everything were four times too long for Megamaid's eventual dimensions, we didn't think audiences would come away saying, 'That doesn't fit in there!' We finally added a couple of shots that were more expensive than the others, but which really sold the transformation, because you really see these huge pieces transforming.

"Before we added shots of Megamaid's breast and head flipping up out of the front section of the Cruiser, all we had were small close-up sections that transformed – an arm that shot out of a bulkhead, for instance – and we felt that the audience wouldn't get a sense of that huge mass transforming. It was a tough mechanical task it's almost the same as engineering a real transformer. Fortunately, since we only had to work within the limits of the camera's eye, we could cheat everywhere else."

The man who shot most of the transformation sequence on Apogee's motion control rigs, effects cinematographer David Hardberger, found it difficult to work with the huge amount of mechanical hardware inside the various transformable sections. "The model shop was forced to use a number of devices that aren't commonly used in order to make the most use of the limited space inside the transformation sections, and we ended up fighting those sometimes," he explains, adding that the real problem photographically was to create a feeling of size, paradoxically, in the huge Spaceball Cruiser: "Photographing the Spaceball Cruiser was like photographing a 17-foot pipe with a lot of bumps on it, and if we shot it from certain angles everything seemed to compress together, making it appear shorter than it really was. In order to fight that, we had to be very judicious about the angles we picked in order to give it the proper feeling of scale. It was kind of a trick."

Trickier still were the lo-



gistics involved in executing a complex combination of live action and miniature photography for a sequence in which actor John Candy – as Barf, the half-man half-dog Mawg – climbs from the spaceship of the hero to another as the two craft are about to be swallowed whole by the Spaceball Cruiser. "That was difficult to plan," Donen admits, "in the sense that we had to shoot everything backwards: all of the models had to be shot first because of scheduling, then we shot John Candy climbing down the ladder."

In addition to the Spaceball Cruiser, this sequence involved two ships that were, in many ways, even more difficult to build and shoot: the hero's (Lone Star) Eagle 5, a starcrossed Winnebago, and the princess's Honeymoon Coupe. Since both craft had to match exactly with full-scale functional vehicles, the demands on the modelmakers were exacting. While chief modelmaker McCune acknowledges that the Spaceball Cruiser "used more fiber optics than I've put into all the models I've ever done!," he is quick to point out that the Eagle 5 Winnebago was actually much more difficult in terms of the number of man hours and problems to solve: "We had to copy the full sized Winnebago exactly, it had to match up to quick cuts, and it had to hold up to intense scrutiny where you could see a doorknob on it. It was a mind boggling, intensive problem because it had a lot of kinetic features on it. For this reason, we had to put a number of motion control motors inside, all of wihch had to fit into a relatively small space. Putting all of that into that very small model was very difficult, kind of like trying to put ten pounds of stuff into a five pound box."

"I had a little trouble with the Winnebago," Hardberger adds. "The Winnebago was generally easy to work with because most of what we had to do with it was pretty straightforward and the model was exquisitely done. The biggest problem I experienced was

Model maker Jay Roth details the Megamaid head that flies in space.

that because the side of the Winnebago was really shiny, which could have presented some matting problems, we had to make sure we didn't get any keylight reflection off the ship."

As Candy descends the ladder from the Eagle 5, he is seen to enter a round, white craft, the princess's Honeymoon Coupe. Although the coupe was relatively easy to build, it did present a number of challenges photographically. "Since we were matching to a full sized ship, once again we had to be very careful to light our model and shoot it to match the real vehicle," Hardberger says.

After the model photography was completed, the live action segment involving John Candy had to be shot on-stage at Lorimar, where space was at a premium. "The congestion was amazing!," effects cinematographer John Sullivan marvels. "It wasn't so much that we couldn't find a place to shoot, it was just a matter of clearing enough space to lay down our blue screen, string it and pull it up into position."

Fortunately for Sullivan, it had been previously determined that the shot would incorporate Apogee's Blue Max front screen projection system using a beam splitter projector and a nodalized Panaflex camera. It is a highly efficient blue screen method which requires a minimum of space. "If we had been working with a standard blue screen, we would've had a terrible space problem getting enough lights in there to make it work, so the Blue Max was ideal," Sullivan says. "There was very little heat generated, even though we were working at a 4.5 stop. We would've had trouble getting up to that high a stop, however, had we not had the high speed 5295 blue screen stock. It was very beneficial."

For optical supervisor Roger Dorney, combining all of the disparate elements that make up a shot like this was a difficult task that required mixing several different matting techniques, the rule not the exception on *Spaceballs*. "It was a real difficult shot," Dorney says. "As things do, the ideas changed, and it was decided that the live-action blue screen shot had to be reduced, which made it a nightmare since I had to start mixing different techniques again. Originally the live-action part of the shot was supposed to be 3-4 times larger than it appears to be in the final composite. I combined the reduced blue screen image of John Candy with two reverse blue screen shots of the Winnebago and the Honeymoon Coupe. Since the original size relationships had changed, all of the elements had to be jerked around and made to fit, but it came out pretty well.

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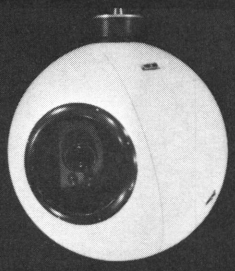

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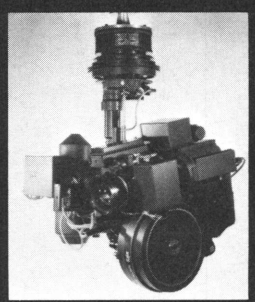

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"In general," Dorney continues, "we had to marry a lot of different matting techniques together throughout the show. Some of our shots used conventional blue screen, reverse blue screen, roto-mattes and other types of mattes all in one. Each of those techniques is usually treated a little differently, so in combining them it gets to be like a giant jigsaw puzzle we've got to put together without degenerating each of those units to the point where they look like junk. Staying as close to first generation as possible makes it difficult to marry these different matting techniques."

One of the more interesting "collages of technique" Dorney assembled involves the planet Druidia's translucent shield, a glass dome that entirely envelops the planet. Problems arose when a doorway in the glass dome needed to open and close to allow the passage of spacecraft to and from the planet's surface. "We originally tried to do it practically using a dome with a hole cut in it, but that's exactly what it looked like," Dorney admits. "We ended up doing the effect utilizing graphics to represent the doorway. The door has a little filligreed edge to it which overlaps both the open door and the surface of the dome. Of course there's a bunch of shots where the dome opening has to be combined with planet Druidia, as well as a ship gliding down through the doorway and another cruiser all in one, which necessitated the blending of a number of different techniques."

Keeping a balanced sense of the absurd was one of the *Spaceballs* effects crew's greatest challenges. "All along," recalls Donen, "we kept reminding ourselves that this is a comedy. As effects technicians, we are very easily wrapped up in trying to capture the beauty of spaceflight, for example, but we didn't let that happen on this picture. We were trying to do *Blazing Saddles* as space opera, so everything in this film had to be done with humor."

In keeping with the Brooks style of parody, it would have been jarring had any of the *Spaceballs* effects departed too radically from traditional *Star Wars/Alien/Star Trek* type effects. "Traditional is exactly the kind of show we're trying to do," Dorney adds emphatically. "It's a comedy, so the effects have to come second. Since the point of the film is to use various images that have been created for *Star Wars, Battlestar Galactica* and *Star Trek,* the effects are supposed to look the way they did in those shows. If we went off and did it our way, it wouldn't be valid. The point is to duplicate those effects.

"One thing that's kind of unique is that we've all worked on at least one of the shows we're borrowing from. Half the crew worked on *Star Wars,* I worked on the *Star Trek* TV show, a bunch of us worked on *Star Trek – The Motion Picture,* and a couple people worked on *Close Encounters,* so it's kind of like old home week!"

If it feels somewhat nostalgic for the effects crew to parody the landmark visuals of films that less than a decade before changed the look of motion pictures forever, it only serves to point up how quickly the state of the art becomes status quo. The "traditional" effects of *Spaceballs* are exactly the same type of effects that forced John Dykstra and Richard Edlund et al to reinvent the effects field in 1977, yet today they are commonplace. "The effects of *Spaceballs* are straightforward in the sense that we didn't need to do a lot of R&D to satirize and parody this genre," Donen says. "We're not talking about a new bang for nine year olds. The bang an audience gets out of this movie should be a rolling, splitting sideache from laughing throughout this picture. That's what making this movie is all about." △

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Creating a Vortex for *Monster Squad*

by Les Paul Robley

Young filmmakers are usually told to avoid three things as directors: kids, animals and special effects. Fred Dekker, director of the sci-fi spoof *Night of the Creeps*, had to contend with, not one, but all three problems in his latest film, *The Monster Squad*, released this summer. Dekker calls it a cross between *Stand By Me* and *Ghostbuster.*

"I had the idea to do Our Gang meets the old Universal monsters," said Dekker. "I felt we hadn't really seen those monsters in a real movie since Abbott and Costello met Frankenstein in 1948. The more I thought about it the more I was intrigued by the kids and the concept of doing something that was sweet and heartfelt and sincere – along the lines of *To Kill a Mockingbird*, or *The Adventures of Tom Sawyer*, but in a genre sort of way. I'd always wanted to set the film in the South and wanted to portray that sense of mystery you have when you're a kid."

Although it's a comedy to a certain degree, Dekker takes his myths and monsters very seriously. "I firmly believe in counterpoint and contrast. (Steven) Spielberg is my idol and what I've learned from him is that, if you're going to scare people, it's much scarier to have a joke on both sides of the scare. And if you're going to make people laugh, it's much funnier if you have something serious on both sides of the joke."

Despite the usual warnings, Dekker insisted the kids were all wonderful to work with in that they had no preconceived walls which adult actors sometimes erect in a director's path. The characters they portrayed were all normal kids – just a little screwy – as he was as a child spending hours indoors watching old Universal horror movies on TV, or listening to "9th Street Bridge" on the family phonograph.

"Essentially, not only do they [kids] love monsters, but they honestly believe in them," he continued. "They believe in the various rules of monsterdom. They believe there is only one way to kill a werewolf. What they don't know is that 100 years ago, Professor Van Helsing, archnemesis of Count Dracula, discovered an ancient amulet which could control the balance between good and evil. Dracula possessed the valuable icon back in 1888. But, Van Helsing's descendants stole the amulet and brought it to America to a small town in the South. Now, every 100 years, what goes around, comes around. The balance of good and evil becomes vulnerable and the amulet is the key to controlling the scales. Dracula has come seeking the amulet to

Photos by Virgil Mirano

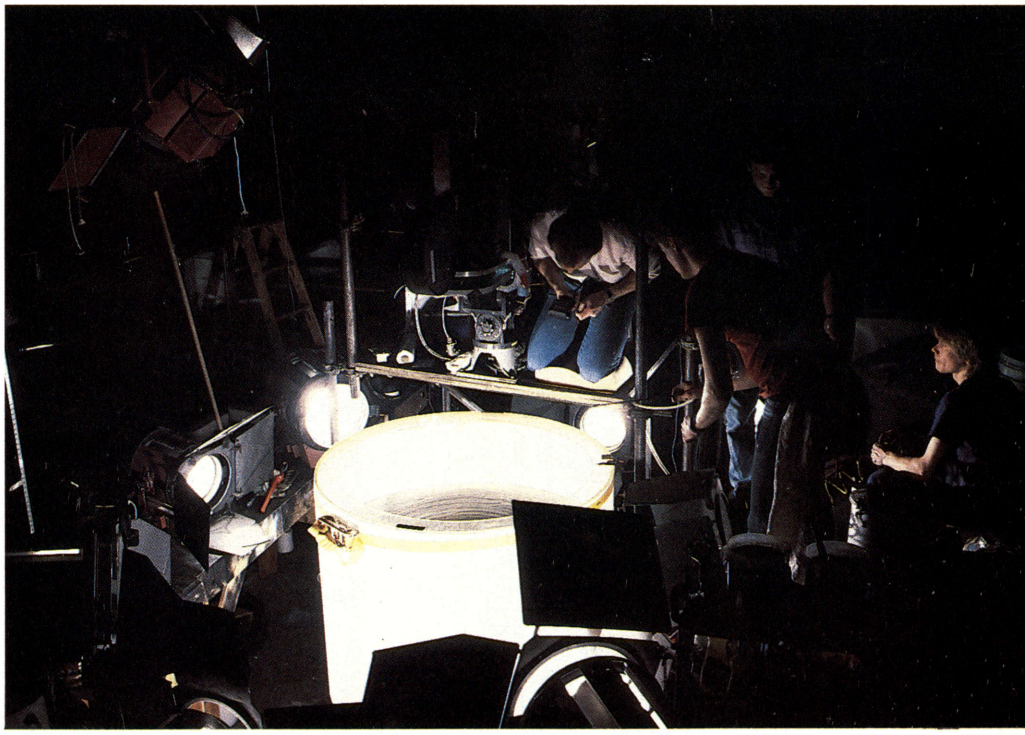
tip the scales towards evil so his children of the night can rule forever, and the kids have 48 hours to stop him."

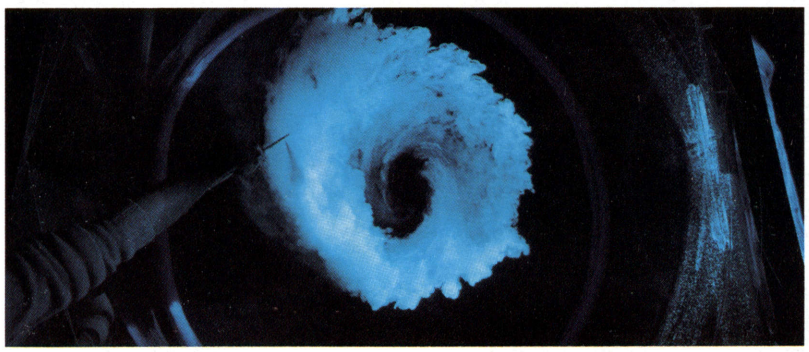
Along the way, Dracula enlists the aid of all the famous monsters we know and love: the Mummy, Wolf Man, a gill man, and a reluctant Frankenstein's monster. At first, Dekker thought to actually recreate the original Jack Pierce designs, and really bring those monsters as we remember them onto the screen. Though the creatures are all in the public domain (except for the Creature), the specific makeup designs are not. They are copyrighted by Universal.

"As it stands, they look very similar and in some cases I think we've made improvements just by virtue of being state-of-the-art," Dekker added. "The Wolf Man was always a fairly crude concept because he was a man with fur on his face. Makeup effects artist Stan Winston (*Aliens, Predator*) and I agreed: he's a wolf! He walks like a man and has a man's physiognomy, but, for instance, the shape of his head is between a wolf and a man – it isn't a man's. So, I think our Wolf Man's pretty special and scarier than the original."

Designed by Winston, the Wolf Man has a human body that is much bigger and more muscular than a normal human's. As a kid Dekker never liked how Lon Chaney Jr. would dissolve from one face full of fur to another. He reasoned: Since a wolf is a powerful critter, one's whole body must expand when transforming into a werewolf. So he was played by a body builder in wolf's clothing. Shots of his metamorphosis were kept to a minimum since werewolf effects are as common today as lice.

Dracula obviously looks like whoever the actor is who is cast for the part. In this case it happens to be Duncan Regehr. "Franky" doesn't really resemble Karloff's or Glenn Strange's classic creation. He was made to look a tad more realistic with a 4-hour/day make-up job that, effects-wise, is fairly straightforward. Dekker said there's a real sense of pathos to him, for like the misunderstood monster in Shelley's novel, all he wants is to be like others. He finds friends in children.



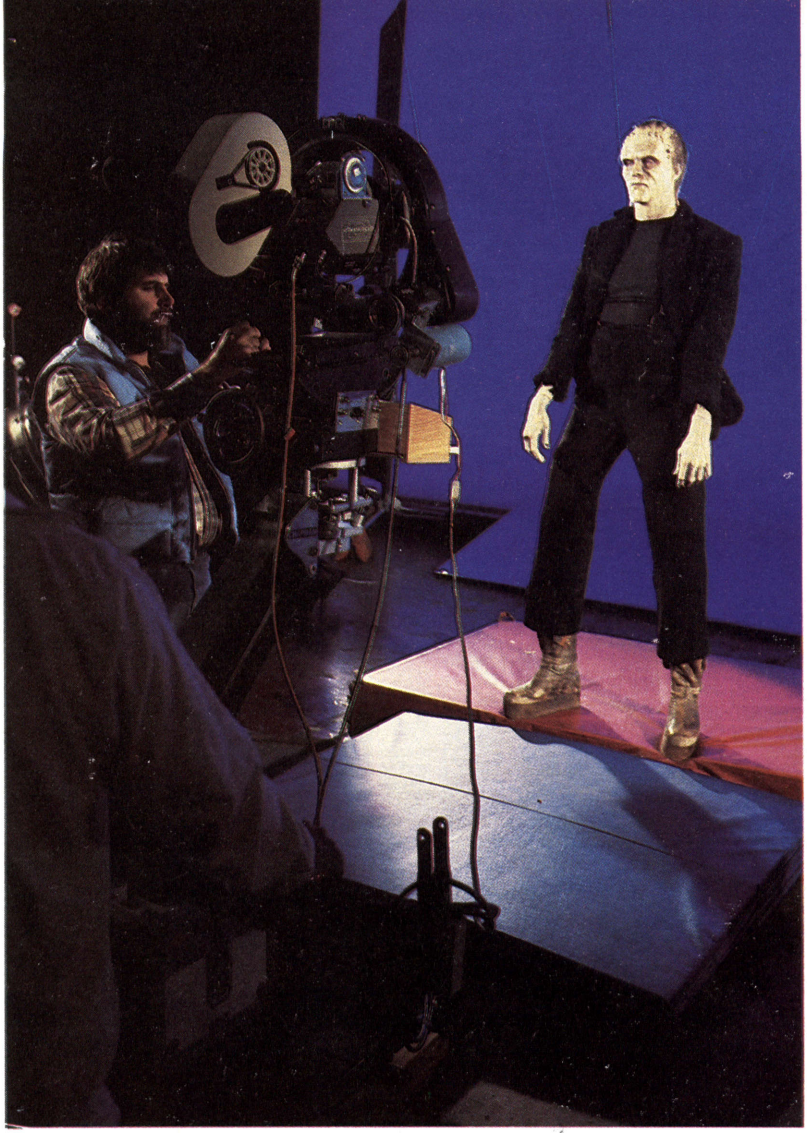


Opposite page: ***Vortex composite.*** **Above:** ***Boss Film's circular cloud tank with 65mm camera looking down throat of vortex. Garry Waller is shown in picture.*** **Left:** ***Vortex in cloud tank.***

Since the Creature from the Black Lagoon is a copyrighted character that Universal created for its classic trilogy, the crew of *Monster Squad* had to change him somewhat. Explained Dekker: "He is a gill man and does come from a dark lagoon. But he's physically different and, I think, scarier. He was originally too primitive so I asked Stan to make him a little less real and basically more streamlined. He wasn't elegant enough for me. He's always wet and squishy and is actually out of water only at the end of the picture."

The Mummy turned out better than either of them expected. "The first thing Stan and I agreed on was that mummies as we've seen them are generally too big and fat. In reality, mummies were often children. And after 2000 years wrapped up, even with the preservation techniques the Egyptians used, you're not going to look terrific."

The crew sought the thinnest person they could find who was still healthy enough to walk around. They hired 98-pound Michael McKay, "a wonderful guy and terrific actor." Dekker said even if he hadn't



Wayne Baker preps 65mm Panavision camera with Panatate for blue screen photography of Frankenstein. Evil vortex forms on the street in small town, completing blue screen composite of all elements.

been . . . they would have cast him.

Winston designed a diminutive, creepy skeleton wrapped in bandages. Playing the face as a skull, McKay wears prosthetic makeup which made his eye sockets deeper. Half of his skeletal face and teeth reveal themselves behind the tissue. His tight, compact form moves haltingly, dragging his feet in homage to the original.

Most of the special effects were accomplished on stage during principal photography. Bradford May was director of photography. *Monster Squad* is distinctive in that apart from stop-motion animation, there is every conceivable type of effect in the feature: matte paintings, traveling mattes, process shots, rotoscoped animation sequences, and all types of mechanical, pyrotechnic and make-up effects.

The difficult effect of Dracula changing into a bat was done by Boss Film. According to Dekker, Boss' philosophy is that they're essentially magicians: "So, they have to do what the masters do, that is, create a diversion. If you attempt an effect like Dracula changing into a bat, there's really no way to do a diversion. So, we added one. His cape falls off, the actor does a jump in the air and a wisp of energy encircles him. From that moment it ended up finally a kind of supernatural effect – not a straight organic change from a man to a bat."

The effect was achieved by hanging the actor on wires in front of a blue screen. Boss employees Brent Boates and Neil Krepela used a fun-house mirror rig to distort the actor's image on film. This shrinking image of Regehr was overlapped with similar blue-screened footage of a bat puppet. Animation was added to sweeten the blend and a 65mm plate of a cargo hold replaced the blue screen background.

Another transformation occurs after Dracula blows up a police car with a stick of dynamite. The leaping flames create a shadow against our hero's house. The camera dollies past Dracula, and we see his animated shadow change to a bat, just as actress Mary Ellen Trainor steps out of the house beside it.

In another scene Dracula arrives and is standing on a hillside over-looking the sleeping town. He whispers: "Let it begin." The camera dollies closer during a split-second lightning flash, his face becomes a demonic skull face. Winston fashioned a skull mask for Regehr that retained the same proportions as his face. The crew repeated the same dolly maneuver on tracks while the actor remained absolutely still. During one of the lightning cracks the editor simply cut to the few

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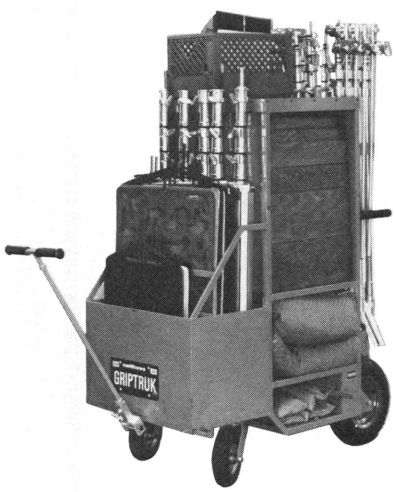

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frames of Regehr wearing the mask.

The jewelled amulet which is the crux of the story, had a real laser behind it. A large power supply was fed to a fiber optic line that ended in a prism held by two gold dragons. Smoke was added to enhance the beams of light spit forth by the amulet.

But the climax is where Boss Film's magicians excelled. At exactly midnight on the Night of the Beast, the kids must read a mystical incantation from an old Romanian parchment to send the evil into another dimension. The misty gray-white vortex they create has a black hole in its center and everything not bolted down gets sucked into it.

The effect employed a combination of cloud-tank, controlled smoke and lots of blue screen matte work. Miniatures and full-scale people were photographed in a similar manner to the pioneering effects for *Star Wars*. To move objects in space, the camera was tracked in relation to the stationary object hanging in front of the blue backing.

One interesting use of a matte painting opens the picture. In the Carpathian Mountains of Transylvania, villagers approach Dracula's castle carrying torches. The castle was a matte. Dekker tried to recreate the feeling of the early Universal horror films with this shot. "I stole the grim reaper from the original *Frankenstein*," he admitted. "The first body Colin Clive and Dwight Frye dig up at the very beginning of the picture, you see a grim reaper on the hillside behind them." The crew rebuilt their own to match the one from the 1931 version.

As in *Ghostbusters*, the kids have formed the Monster Squad and know more about monsters than anyone else. Viewers may leave the theater with the sneaking suspicion that if monsters show up anywhere, the authorities'll know whom to call. △

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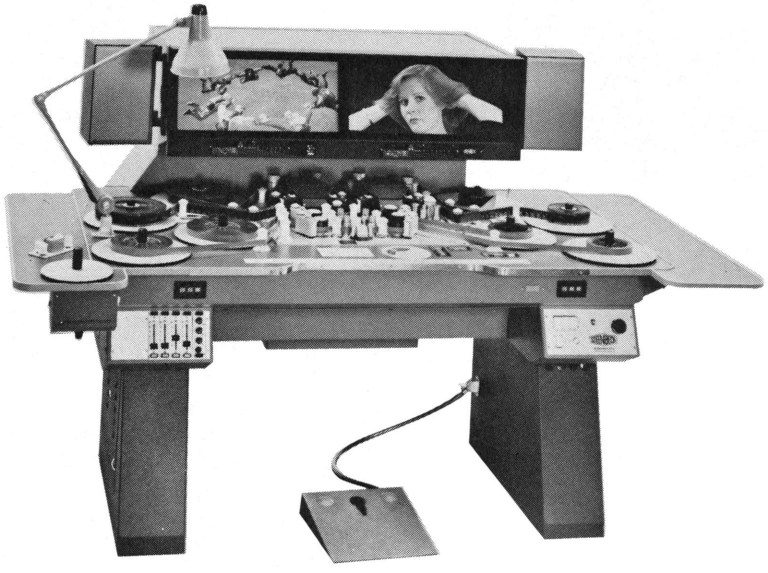

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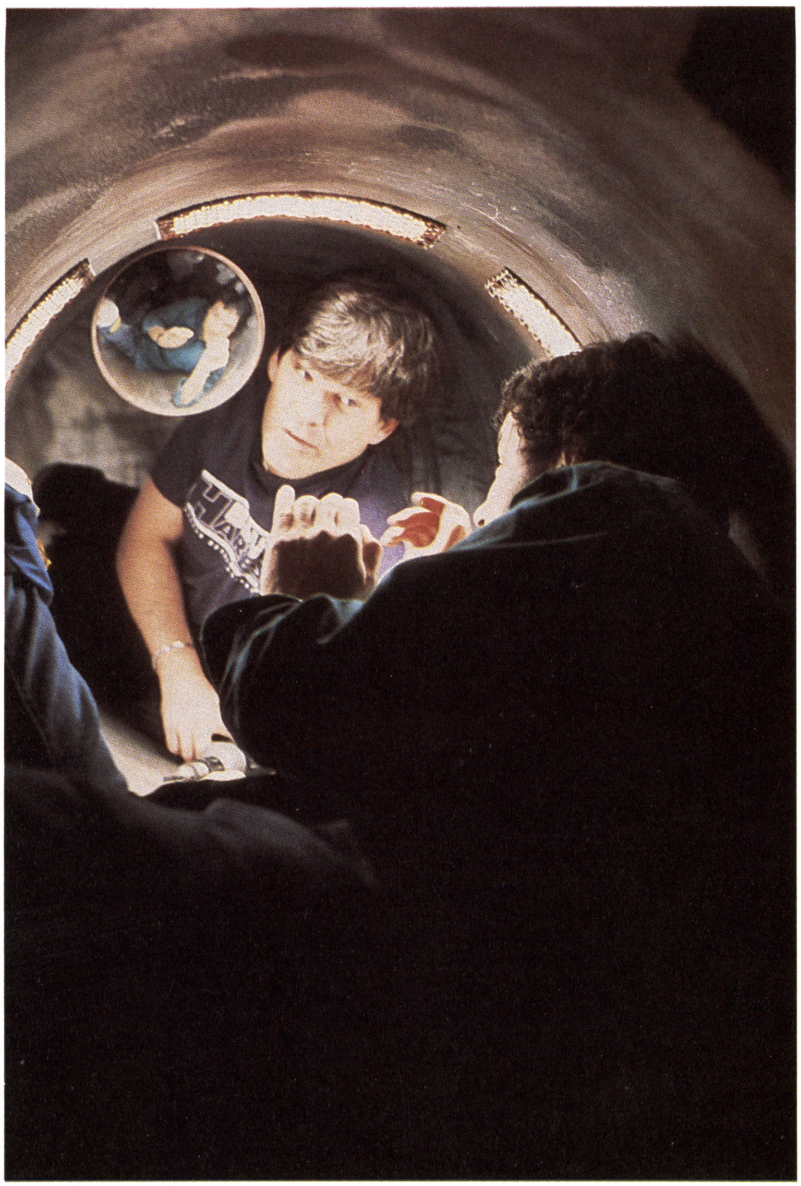


Director of photography Rick Fichter and Gutierrez line up wide angle mirror.

Endless Steel Tunnel for *Running Man*

by Ron Magid

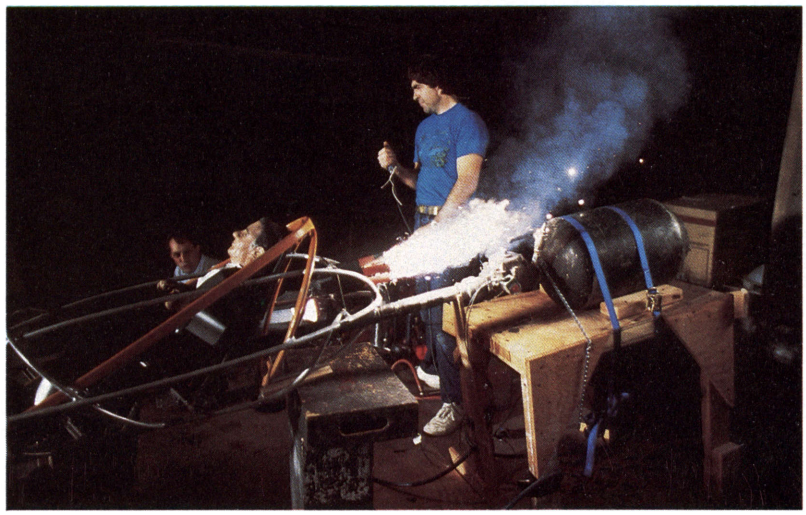
Sometime in the near future . . . Before a live studio audience, a man is strapped onto a contoured chair, his wrists and ankles bound, as a steel framework envelopes both the chair and its occupant, effectively converting it into a peculiar sort of vehicle. In a flash, the vehicle is blasted out of the studio and into a vast, endless steel tunnel, where it careens madly at breathtaking speed, twisting and turning, climbing the rounded sides as it plummets through the dimly lit, rounded corridors, sparks trailing from its skids while they screech like fingernails on a blackboard. There's suddenly a light up ahead as the end of the tunnel comes looming out of the blackness, retro-rockets fire, and the entire rocket sled crashes into a huge safety net spanning the tunnel's mouth.

This dramatic scenario opens each and every installment of the "Running Man" game show that is the hyperactive focus of the film of the same name. The visceral, kinetic high-speed effects are the work of Gary Gutierrez and his diabolical staff at San Francisco's Colossal Pictures, all of whom have conspired to give us a ride we'll *never* forget. As with nearly all of Gutierrez' feature film effects, like those seen in *The Right Stuff* and *Top Gun*, all of the footage assembled for *Running Man* was shot live, as opposed to using costly and time consuming stop motion animation. "We wanted to provide the editor with a lot of raw footage that he could make an exciting sequence out of," Gutierrez explains. "That excluded doing anything frame by frame because then each shot would be precious. We wanted to avoid using stop motion because it looks like animation. There are occasions where it can be really nicely used, but it just wasn't practical for what we wanted to do."

First off, Gutierrez and his staff had to devise a method of building a miniature tunnel large enough to accommodate a small, custom-built motorcycle-type dolly. After some tests, the crew constructed a 260-foot long half-scale miniature tunnel using large concrete column molds called Sonotubes. "They're essentially big hollow tubes," Gutierrez says. "We checked out the various sizes available because we wanted the tunnel to be as small as possible and yet

Left: ***Miniature sled with passenger, shot from air cannon, skids up the half-scale freeway on ramp.*** **Below:** ***Peter Stoltz and Chuck Ray launch miniature sled.***

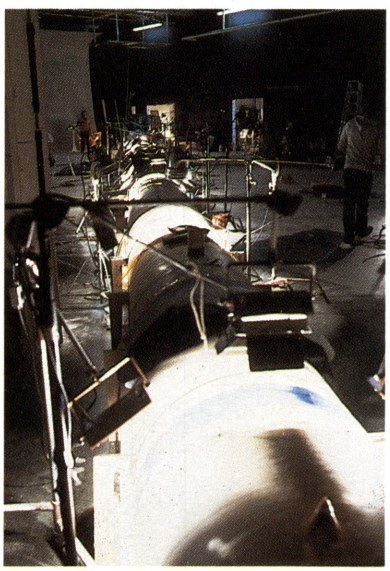
allow our miniature sled and our cameraman to actually travel safely through the tube. Out of 40 or 50 sections of Sonotube we created a tunnel that ran diagonally through our stage, and then we cut a hole in the stage wall so it could make a bend around a corner, come back through our offices, pass through another doorway, and take another turn so it would end up fairly adjacent to where it began."



In order to give the inside of the tunnel the appearance of having been constructed out of metal, Gutierrez had his crew face each Sonotube section with aluminum. "The Sonotubes had to be cut in half lengthwise," he says, "and then lined with aluminum sheeting so they would have a metallic finish on the interior. The sheeting was adhered to each half and then the tubes were put back together. It was a logistical problem, because we had to glue the sheeting with grip cement and the fumes are toxic, so we had to have an elaborate fan system.

"Once we'd built a framework to hold the tunnel, and the entire 260 feet of it was put together, our guys had to go inside there for days to sand down the seams and add filler to clean up the joints. Then the entire interior had to be painted with rust stains so it looked really sleazy. Crawling into that thing was like going back to the womb – you'd literally be on your hands and knees and say goodbye to the world as you went scuttling off. When you got about 100 feet into the tunnel, you couldn't see anything in either direction. It was miserable working in there, but it was kind of fun too, especially once we were able to ride through it on our little motorcycle."

Although the motorcycle dolly could only travel at approximately 7 mph, 260 feet of tunnel yielded very little footage even at 24 frames per second. To enhance the apparent velocity of the rocket sled through the tunnel, most of the shots were set at either 12 or 6 FPS, so the amount of footage from any given run was very low. This meant that in order to get all of the tunnel footage necessary, Gutierrez had to find a number of ingenious ways to maximize his single tun-



Above: ***Fichter is towed backwards through tunnel miniature on steering-wheel mounted camera.***

nel set through redressing to make it appear longer and more varied in its detail. "In order to make the transition from one tunnel shot to another," Gutierrez explains, "we built the tunnel so it ends in a dark room that we built at either end to make it appear as if the tunnel is going off into blackness.

When the camera plunges into the darkness, the editor can then jump cut to a new section of tunnel from another run, so it looks like one continuous event. Inside the tunnel we cut different kinds of holes and slots in the sheet metal gridding above, so we could plug up some holes on some runs and unplug others which would create different patterns of light on each run. We would also shoot in both directions in the tunnel, so the bends would sometimes go one way, sometimes the other. We would also turn the camera on its side so these same turns would appear to go straight up or straight down. We would often gel the lights differently to vary the colors in the tunnel to create different colored sections. By using each of these methods, we were able to create seemingly new sections of tunnel from the single tunnel we built."

Since Gutierrez needed continuously traveling shots through the tunnel, a vehicle had to be devised that would be capable of fitting into the miniature set along with the cameraman and, in some cases, the miniature rocket sled. Using a wheelchair motor and motorcycle tires, German engineer Michael Steffe, assisted by a Berkeley wheelchair designer, created the perfect mini-motorcycle dolly for the job.

"The motorcycle was about four feet long and about a foot high *max*," Gutierrez says, "and it even had a little headlight. For straight point of view shots driving through the tunnel, the cameraman would lay down a pad and hold onto the handlebars where the camera was mounted, and shoot along at about seven miles per hour. As it moves through the various sections of tunnel filled with smoke and various patterns of light, the shots look almost like outtakes from the Stargate sequence in *2001*, except in this case we've got a camera racing through a tube instead of slitscan effects.

"We also made a trailer that was pulled behind the bike – the cameraman would lie on the trailer facing backwards and the driver would face forward on the bike, and their legs would interlock at the knees. The camera was mounted on a steering wheel which the cameraman could turn to rotate the shot 360°, which meant that as the bike went through the tunnel, the point of view would appear to spin. Since we were basically shooting backwards, we'd just reverse the footage for our forward point-of-view shots."

Turning one of these trailer point-of-view shots into an objective view of the rocket sled racing through the tunnel was a very simple matter, Gutierrez recalls. "When we wanted shots of the sled itself smashing through the tunnel, we attached our sled miniature to our trailer by a long, thin wire. Thus the motorcycle pulled the trailer which pulled the sled miniature while the cameraman was shooting backwards at the sled as they all rocketed through the tunnel. It looked as if someone in another sled just in front of the contestant's sled were looking back at him as he went screaming around the turns!"

Gutierrez also supplied background plate elements for rear-projected live action shots of the contestants inside the sled reacting to the wildly unpredictable rollercoaster ride. "If they wanted a low angle shot from under the contestant's chin looking up at the tunnel ceiling, we shot plates of the lights overhead zipping by," he says. "We worked out all of the live action with rear projected background shots in advance, to make sure there was

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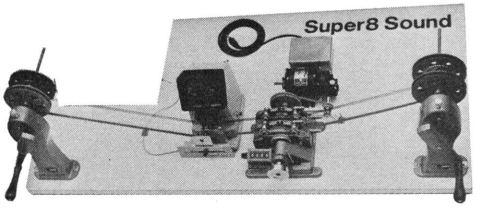

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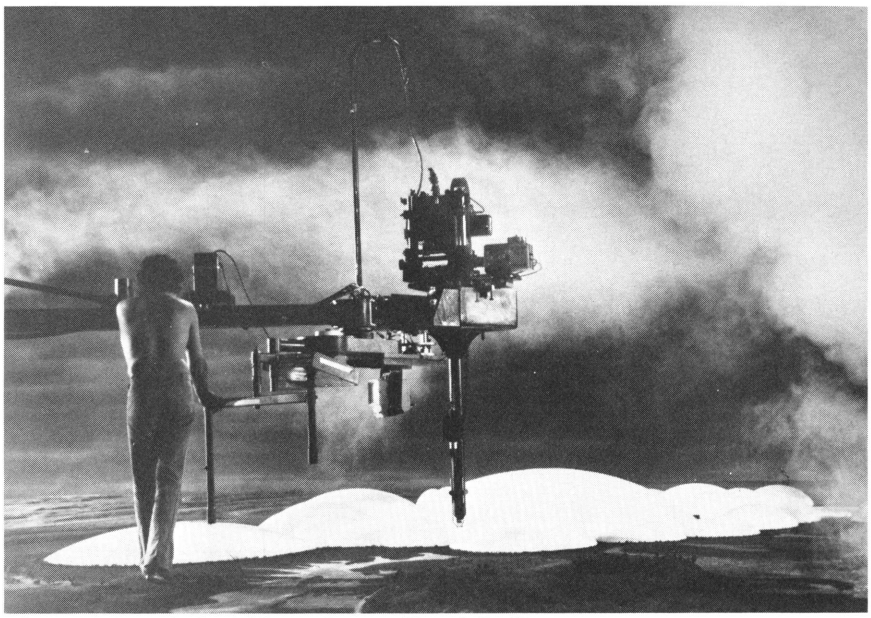

(Photo is of Kenworthy Snorkel Camera in use on "Logan's Run")

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proper interactive lighting on the actor's face to match that in our plates. They used lights on drums that turned in rhythm to our plates, so it actually looked like the actor was in the tunnel."

Model shop supervisor Scott Marshall was the man responsible for the number of half-scale miniature rocket sleds used in the film, some of which were equipped with elaborate radio-controlled pyrotechnics devised by Peter Stoltz. "In order to add an extra touch of realism," Gutierrez says, "we wanted the sled to spark as the metal skids screeched against the metal walls of the tunnel, so we created a device that could be operated from outside the tunnel which would cause a piece of rock flint to drop onto an abrasive wheel.

"This mechanism was attached in four places on the sled's skids, and whenever the radio control was activated, sparks would fly, which really added a lot of visual excitement to the shots. The sled model was also equipped with pyrotechnic propulsion rockets that fired out the back, and it carried one of six different half-scale dolls we made of each of the contestants that went through the tunnel."

Although at most times the sled miniature was either attached to the camera trailer or pulled through the tunnel on invisible wires, it was actually launched using a compressed air cannon system at the outset of each journey through the tunnel. "On the back of our miniature sled, disguised as one of the propulsion rockets, was a tube that slips over a pipe which is connected to a dump tank of compressed air," Gutierrez explains.

"When the valve was opened and the compressed air released, the sled shot down the tunnel and careened off the walls. In this case, the camera was actually located at the bottom of the launch ramp, watching the sled as it shot overhead, so it has a kind of documentary

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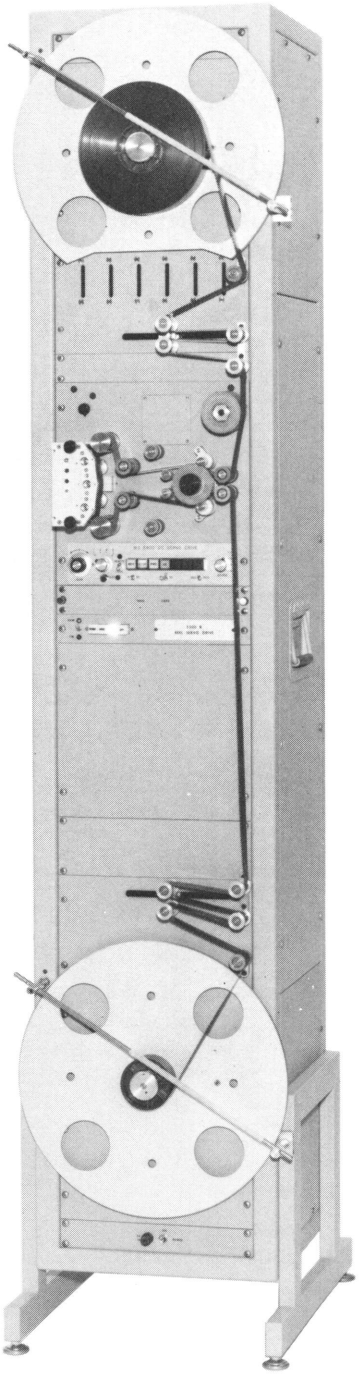

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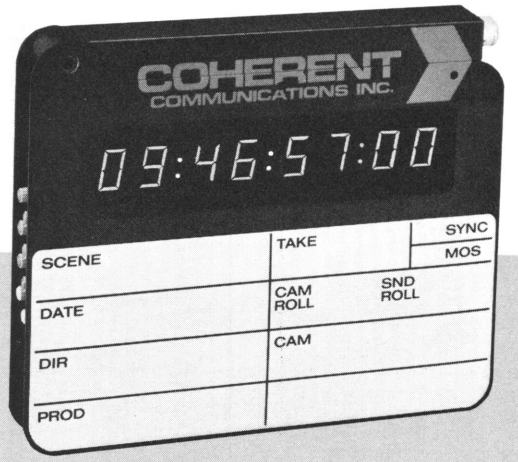

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look. We had to use an elaborate signal system so that our cameraman, Rick Fichter, knew exactly when the sled was going to fire, because shooting it was like trying to shoot a race car as it goes zipping by – except in this case, the camera was right next to the racecar. It was a tough job."

Perhaps the most complex effect Gutierrez supervised for *Running Man* was for a sequence in which one of the rocket sleds fails to decelerate, breaks through the safety net at the end of the tunnel and careens up and over the edge of an abandoned freeway off ramp, finally crashing through a billboard. "We had to build this half-scale miniature on-ramp to exactly match the full-scale location," Gutierrez recalls, "so we used all of the production stills we could get from the location shoot and miniaturized everything, even down to the light fixtures.

"The set was about 80 feet long and 15 feet high, so it took up almost half our stage. Since the sled was supposed to fly up the ramp, I felt that rather than fighting the force of gravity, we would get more propulsion if we built the set going downhill, so it was all built on a slant. The foot of the ramp was actually 50 feet in the air, so we just aimed the camera down in such a way that the shot appeared as if you were looking up the ramp. Again, we used our radio controlled skid so that as the sled seems to shoot up the ramp and flies into the air, then slams into the pavement, bounces against the wall and skids off in the other direction, we could actuate those spark effects to heighten the reality."

Although his effects for Running Man comprise only a fraction of the film, you can bet that Gutierrez's flair for high-speed kinetic visuals have audiences clutching their seats as they hang on for dear life. △

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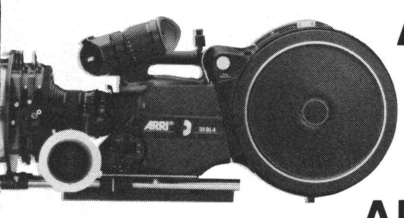

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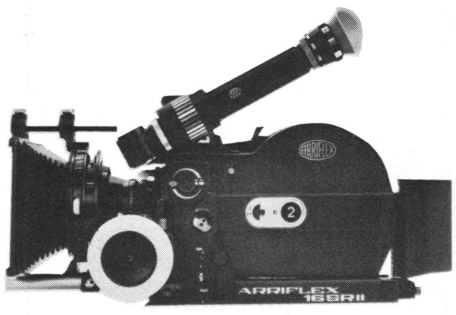

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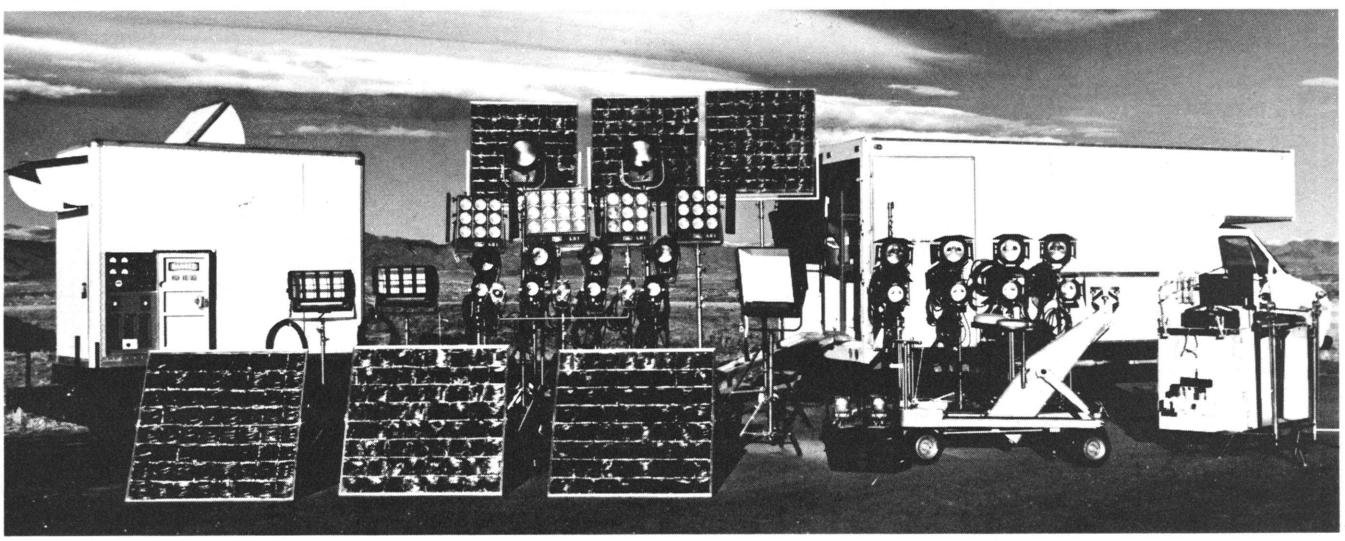

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Making of the *Enterprise*

The new USS Enterprise, the fifth ship to carry the name in the fictional Star Trek world, warped into living-rooms everywhere in early October. These photos reveal some of the long hours of work that went into the approximately 6′ x 5′ spaceship.

(1) This ship, as designed by Andrew Probert, has an eliptical detachable saucer. According to Greg Jein, who made the pattern at ILM, "It was a little bit difficult to make the elipse. We took a north and south and averaged out the other points. Here, we are filling the Plexiglass cross-section with urethane foam to make it solid." **(2)** "This is the finished pattern. After we foamed it, we coated it with resin and cloth. We cleaned it up with body putty and scribed lines in it. It was now ready for a mold." Sean Casey and Wesley Seeds were responsible for most of the moldmaking. **(3)** "This picture is the saucer casting. Bill George and I are taping the windows in. We used die-cut stencils for the window shapes," continued Jein. **(4)** Here we can see the body of the ship and the saucer of the ship being fitted together. "The two pieces are held together with an aluminum armature. This wooden frame around the ship is a guide that we made so that we could keep taking it on

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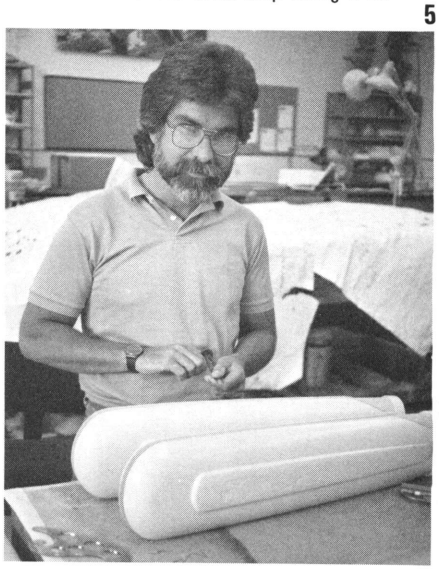

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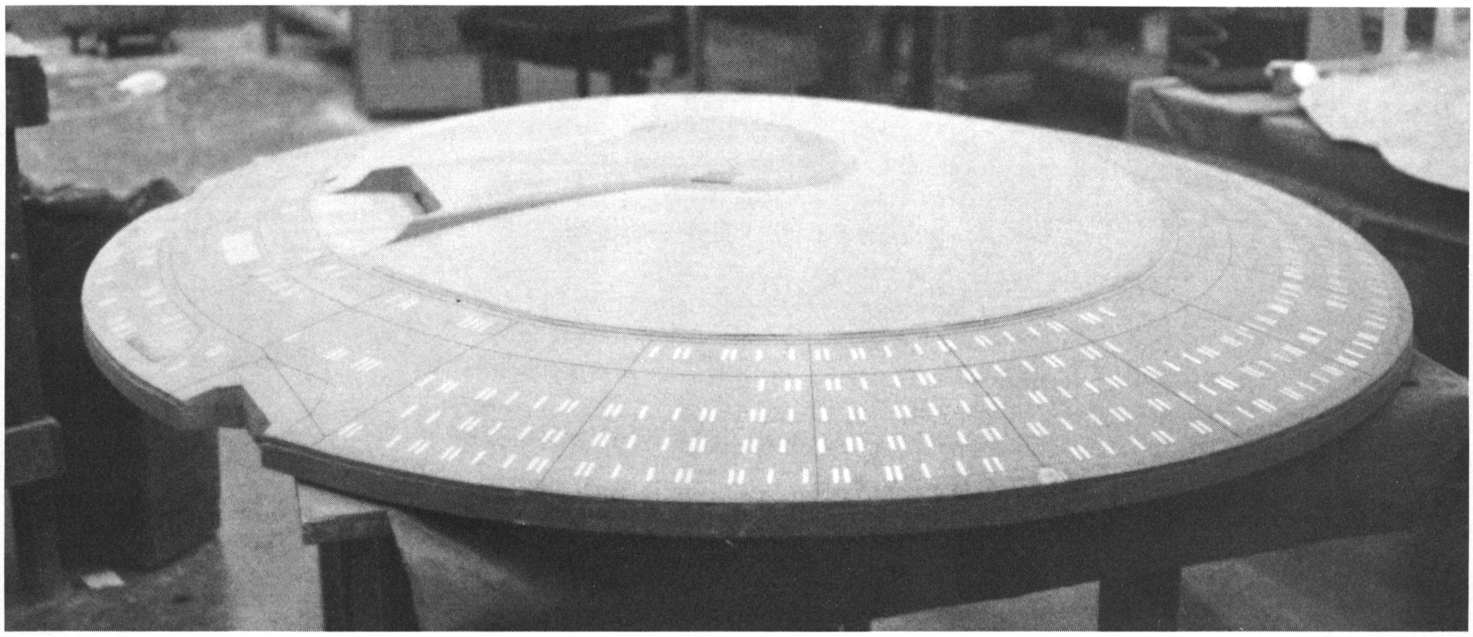

and off and make sure it lined up the same everytime," said Jein.

(5) In this shot, Chris Hammond is detailing the engines. **(6)** Harold Weed is touching up some of the windows after the ship has been painted, to make sure they are clean. **(7)** This is the ship on the stage at ILM. In the background is Peter Dalton, the main camera person.

The Enterprise took about six weeks to build and there is only one. The main light source comes from some 15 or 20 pieces of neon hidden inside the ship. It was designed with six motion control mounts – top, bottom, right side, left side, nose and tail. It is mainly fiberglass and aluminum. The project was supervised by Ease Owyung under Jeff Mann at Industrial Light and Magic model shop. Contributing model makers not pictured include Nick Esposto, who did the engine patterns and the pylons and Bill Concannon, who shaped the neon.

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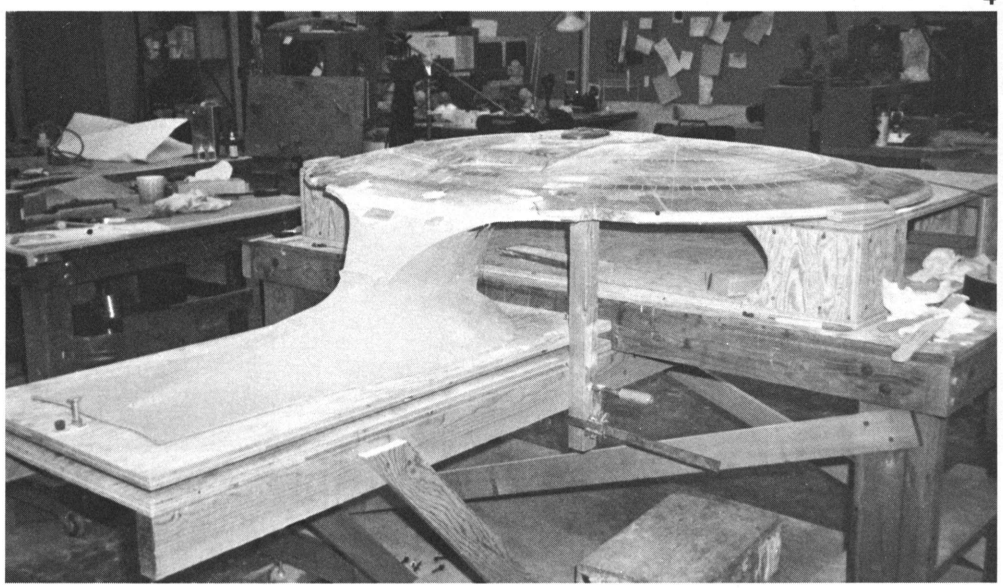

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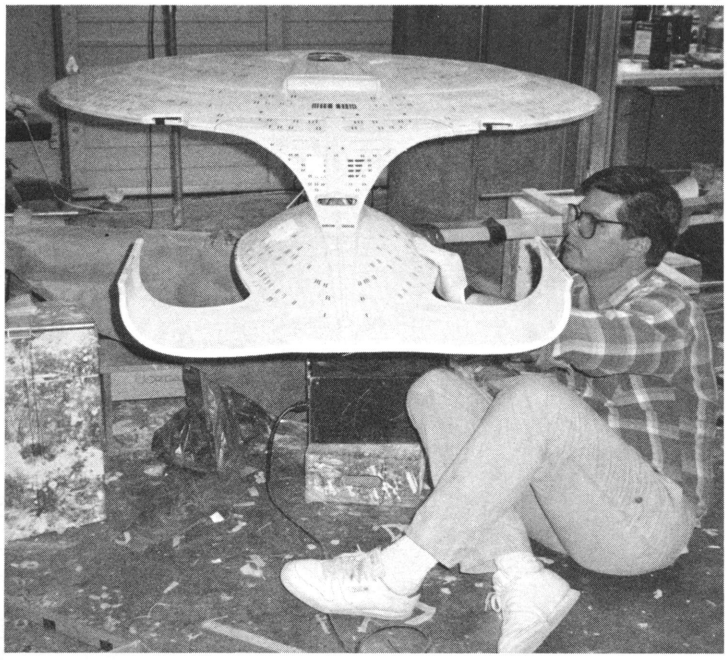

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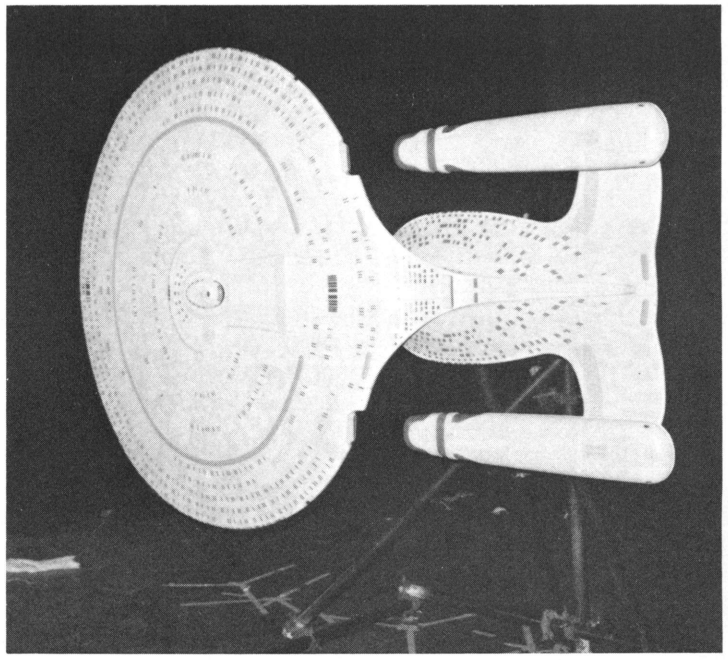

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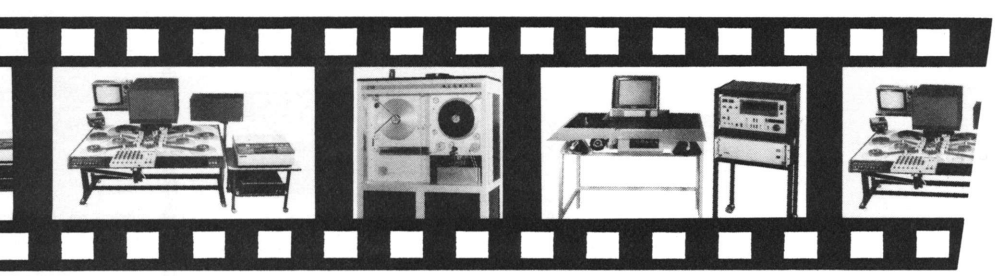

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Weird Make-ups for *Living Dead*

by Ron Magid

After Kenny Myers was selected by producer Tom Fox to helm the make-up effects for *Return Of The Living Dead II*, he began to take elaborate precautions to insure that he and his crew were prepared for any eventuality so that there would always be enough time to make things work.

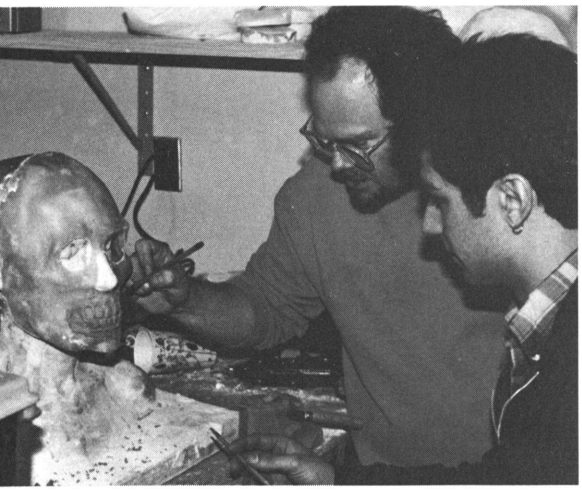
Even at the outset of pre-production, with three months before the cameras were to roll, Myers was already feeling the pressure of the inordinately large number of effects *Living Dead II* would require. Myers was so anxious to capture as much time as possible prior to production that he even hired a small crew on his own money before the funds came through that were to officially kick off his work on the film. "I had about six people on for about three weeks before I had the rest of the crew come in," Myers recalls. "Tom Fox kept saying, 'Hold on, Kenny, the money'll be there' and finally, on a Friday at twelve midnight, I met him at a truck stop on Route 5 and he handed me a large check and said, 'Start!' It was almost like we were doing some drug deal behind this truck stop."

Despite assurances from the production to the contrary, Myers' first order of business was actually designing ghouls. "Originally, they were going to bring in somebody to design characters and then the director and I would sift through and OK them, but that never happened – the organization was just not there. So I ended up pumping out drawings as quickly as possible, which I'm really not set up to do; I prefer to sculpt a character and show it three dimensionally. Fortunately, there wasn't one illustration I did the director didn't like – we just got lucky. I would hit the director at 10 pm and say, 'You like this?' – 'Yeah!' – 'Bye!' Then, whoom! I'd rush back up to my lab and have someone start sculpting."

Kenny Myers applies his revolutionary mix-and-match ghoul makeup.

From his experience on the previous *Living Dead* film, Myers knew he was going to need *a lot* of background and foreground zombies, some of which he would undoubtedly have to conjure up on a few hours' notice. The question of how to best prepare for the upcoming onslaught drove him to a unique answer that could revolutionize make-up effects done on a large scale: Mix and match ghoul bodies, masks and facial appliances. "The only thing that made me feel comfortable," Myers admits, "was knowing that I could slap together a ghoul as quickly as the make-up would allow, so I decided it would be best if we began to pre-make this stuff – I wanted to make our make-up trailer into a sort of Woolworth's – you walk in and come out with any kind of ghoul you wanted!

"For our foreground ghouls, we worked with a 'Ghoul Crew' of seven or eight actors who were with us every night, whose make-ups we could change from night to night. We sculpted two different chests for each actor, to which we could also add bits and pieces of flesh and bone to alter them further on set if need be. These were all glued onto pullover shirts, plus we had individual legs so we could mix and match almost any combination of ghoul body parts



Myers (l) makes suggestions on ghoul underskull/sculpture. Right: Two versions of Fist Face: Mechanical Head (r) and the final gag (l). Below: Myers details one of Joe Reader's fine zombie background masks.

very quickly. We also had dental impressions on each of them, and we made them all about five different sets of teeth."

Myers also had his crew create countless sets of mix and match facial appliances, which were then photographed and catalogued by number. "We had every polaroid of each appliance and the corresponding numbers hanging on the wall of our make-up trailer," Myers explains proudly. "At the end of each night's shooting, I would choose the next day's appliances for each actor by number, pull them all and then lay them out at each station. I would say we made about 75 or 80 different appliance pieces, which we could combine any way we wanted or tear them up to change them. We never felt a lack of pieces, and in fact, I still have boxes of them, so we were covered."

But Myers wanted more than just seven or eight different close-up ghouls on any given night's shoot; he also wanted each member of the zombie legions that limped in the background to have their own distinct personality, so audiences would never feel they'd seen the same ghoul twice. "Even though they were only slipover masks, I wanted the background characters to look good," Myers says, "which is why I hired Joe Reader of House of Horror Studios, because as far as I'm concerned, he's the best mask maker in town. Joe sculpted about 12 basic zombie masks, but even the masks had appliances that we could glue on them to change them around, so by using this method, we easily got 60 variations out of our original dozen characters."

Another complex effect was needed for a sequence in which a ghoul attacks a girl in a cemetery, only to receive a punch that obliterates most of his face. "Fist Face required a couple of different make-ups and two different dummy heads," Myers recalls. "The first make-up was for the initial establishing shot of the ghoul. The first dummy head was used when she nails him in the face. The second head was just a cavity filled with hot melt vinyl guts, so that when she withdrew her hand, she could bring most of his insides away with it, which gets a wonderful reaction. For the end of the scene, where we see the corpse stumble away, I made a make-up that resembled our cavity head and applied it to the back of an actor so I didn't have to deal with hiding his nose."

One of the most intricate throwaway gags, a severed female head, actually worked so effectively that additional throwaway scenes were written in for it. "The head is severed by two grave robbers, played by Thom Matthews and James Karen, who put it in a bag," Myers explains. "When the revitalizing gas gets out, the head comes back to life, Jimmy lifts it out of the bag, it looks at him, says something silly, they throw it in a closet and that was supposed to be the end of it. It was the first thing we shot on set, and the production people just went crazy for it, so they actually wrote additional scenes for it – small little passbys as other ghouls interact with it.

"She required two operators to work her: she was all radio controlled, had a fully articulated mouth and tongue, her eyes blinked and tracked, and she was one of the most fun pieces in the show. Her mechanism basically consisted of universal gimbals for the eyes and the lids and tongue were operated by servo motors. It was very quiet – we could shoot live sound with it as long as the mike was at least three feet away. She also had to take a lot of abuse. As is typical on films of this sort, the first day I brought her on set, they asked me if they could stab her with a screwdriver! I said, 'Sure – once! If you want to throw it away afterwards, go right ahead!' Fortunately, we found a way around that for them."

Despite the best laid plans of Myers and his crew, the production grew further and further behind until it reached the point where most of the film's finest and most elaborate effects had to be shot on the final day; many of them were never shot at all. "They ran out of time,"

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Myers mutters sadly, "not money – just time. It was total insanity, just like the first movie. We were shooting with a main unit, a smaller second unit right next to it and a third unit started shooting in the back on the corridor set, so I had to bounce around from one to another on the last night after having already been on-set for 20 hours. As we were shooting on the corridor set on the last morning, after we'd already shot through the previous afternoon and night, they were tearing the set down around us. We had a completion bond company that was right on us saying, 'Get out *now*, we're shutting you down!' so we were cranking film as they were taking down the windows and the walls!"

Three major effects all ended up being shot on this catastrophic final day of production: the Barrel Corpse – the precursor to Tar Man, a coffin-bound ghoul uncovered by James Karen and Thom Matthews called the Crowbar Corpse, and a lengthy sequence involving the Corridor Corpse, one of the most audacious effects ever planned. Sadly, each of these were in one way or another compromised due to the extreme shortage of time.

Least complex – and therefore least compromised – of all the effects shot on the last day was the Barrel Corpse, actually the first cadaver to become reanimated. As in the first film, the Barrel Corpse is the equivalent of Pandora's box – open it and the scourge, in the form of a vile green gas, escapes. The result: revitalization of dead tissue. While the first film's Barrel Corpse represented the best a somewhat restricted Myers was allowed to come up with under the circumstances, the make-up artist vowed that he would do things his way if there ever was a next time. The first Barrel Corpse merely melted away; for *Living Dead II*, Myers felt it should bloat.

"The Barrel Corpse looks a bit more ominous this time around," he says, "and when he becomes exposed to the reanimating gas, he swells up because I wanted Tar Man to be three-dimensionally bubbly and drippy for this film. Consequently, I didn't want him to melt down, I wanted him to bloat out. The corpse itself consisted of a foam rubber body and head over a fiberglass skeleton. Its jaw was moveable and it also had an eye wink mechanism so that once it was exposed to the gas, it was capable of twitching an eye, its jaw began to move slightly from side to side and then parts of its face began to swell out.

"To do this effect, we simply pumped hexane gas through tubes into the foam of the face and body, which instantly caused those areas to swell up. It only attacks a very small area around the opening of the hose at first, making the foam come up in big nodules, and then it eventually leeches into the rest of the face. Dick Smith was the first to use this technique for a snake bite wound in one of his films, and I've always wanted to use it. It wasn't an easy effect because it was hard to coordinate the movement of the puppet with the flow of the green smoke that fills the barrel, and we were really pressed for time. We also had real hands in the barrel with the puppet – they belonged to one of my guys who laid on his back in front of the barrel – so that as the face began to twitch and swell, its hands would begin to tweak and move."

A funny and disturbing effects piece, the Crowbar Corpse sits up in its coffin, startling grave robbers Thom Matthews and James Karen as they attempt to pursue an honest night's work. "This again was shot on our marathon night, the last night of the show, when we tried to get all these intricate effects on film," Myers reminds us.

"He was green and fungus-y, and he had a head like a lightbulb all covered in moss. It

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took twelve of us to work this puppet. We first see these mechanical corpse hands come up on the side of the coffin, and then the cadaver sits up in the coffin. The articulated left and right hands each required four people to operate, and were used when the hands first come out of the coffin and grab onto the sides. Then there's a cut to Thom Matthews, and when we cut back to the corpse, his arms are already locked into place.

"The arms were also articulated and controllable, the only difference being that they had a rod at the elbow, which the insert arms did not. I was originally going to lift the puppet up myself, but it weighed 60 or 70 pounds and I was so beat I couldn't even pick it up, so I had Lauren Somen do it. He was in a very uncomfortable position with seventy pounds out on the end of his arm and somebody holding him. The puppet sat up beautifully: on cue, everybody lifted up at once, which took a lot of coordinating. At one point, to get everything to work properly together, I had to call out numbers to get the eyes, hands, mouth and head coordinated."

As a final indignity, the Corridor Corpse was to have most of its skin blasted off its face by a burst of hot steam, for which Myers had prepared a simple, ingenious effect – only to have to resort to an even simpler, less ingenious, more direct approach when time once again ran out. "Originally, we were going to do an overlay of steam in front of the corpse, which would have a lot of appliances glued on him which we'd pull off using monofilament, so you'd actually see flesh flying off his face," Myers relates. "Thanks again to Father Time," he fumes, "we had to do the J.C. Penney version: when the corpse emerges from the steam, his skin's already gone.

"The part that came afterwards, in which the corpse was played by an articulated puppet, was shot, but not with anywhere near the amount of coverage it should have had. All we had time for was a medium closeup. After he's blasted by the steam, he was supposed to crawl across the floor in an attempt to reach the elevator before his victim could use it to get away: he reaches into the elevator as the doors are closing and our hero kicks his hand out. The sequence was to end with a quick gag cut to a wall section as we see the corpse's hand crawl along and push the 'Up button.' We didn't get that far – we were kicked off the set. It was all there, all ready to go, and we never got it."

"I'm very proud of my crew," Myers says. "They worked very hard and it shows. Even though many of our make-ups didn't get the close-ups they deserved and could have easily taken, the quality of the work was there. The production was able to do two more days of pick-ups afterwards, but that was only a bandaid over a much bigger problem. We couldn't fix that problem in two days after we'd already spent two months doing seven different ghoul make-ups a day – we couldn't go back and simply re-do them all again; we could never get them to look the same. It was a waste of time."

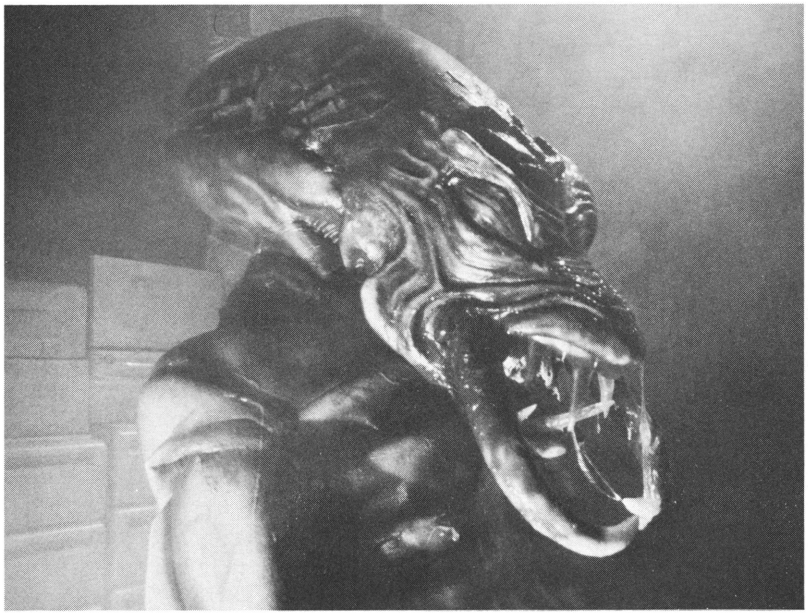
Despite his disappointment and frustration, Myers is justifiably pleased with his work, and philosophical about the fact that some of it just never made it into the film. "Even now it's depressing," he says, "and the tragedy is that all of that artwork is gone and you'll never see it again, but I don't think I've ever been on a film where someone hasn't done something in vain. Overall, I was happy with the show and the way my crew functioned: we were there on time and they never waited on us. We had good stuff to put in front of camera – sometimes they shot it, sometimes they just didn't have the time." △

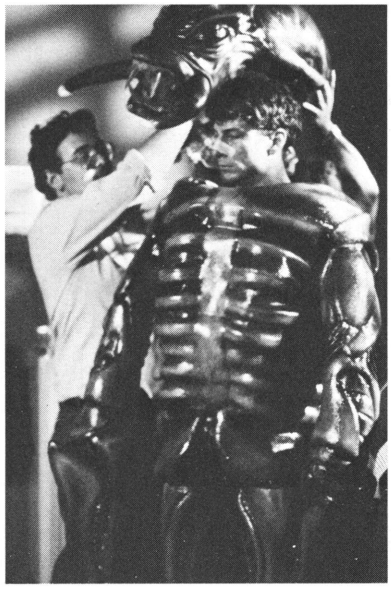
Inventive Make-up for Low Budget *Creepazoid*

by Ron Magid

Creating imaginative, high quality make-up effects on a low budget seems to be a vanishing talent nowadays. There was a "Golden Age" of independent, inexpensive films made over the decade spanning the early '70's to the early '80's, when such talented and now famous artists as Rick Baker *(It's Alive),* Tom Burman *(Demon Seed, The Devil's Rain),* and Rob Bottin *(The Howling)* contributed outstanding effects work on astoundingly low budgets. The films weren't always good, but these make-up effects artists were dedicated to their craft. Among the newest contenders in the field is an outfit called Next Generation Effects, headed by two talented and ambitious men with their first feature film, a no-budget monster flick called *Creepazoid.*

Tom Floutz and Peter Carsillo formed Next Generation Effects originally to supply higher quality wax figures to museums like Movieland and Hollywood Wax Museum, but their desire to raise standards is a major component of any project they undertake. Creepazoid offered the fledgling company its greatest challenge to date. Because the film required so many complex effects pieces and had such a minimal budget, there was virtually no way to maintain the level of quality Carsillo and Floutz insist their work must have at all times. "We make it a point never to 'cheap out' on any of our shows," Floutz explains. "Since this was our first show and we were trying to establish ourselves, we knew the worst thing we could do was to turn out cheap work, so we essentially put all the money we made back into the show. By the time we got through paying for the shop, the materials, and what little crew we had to take care of, there really wasn't anything left," Carsillo adds, "but there are no complaints there – that's what we wanted to do."

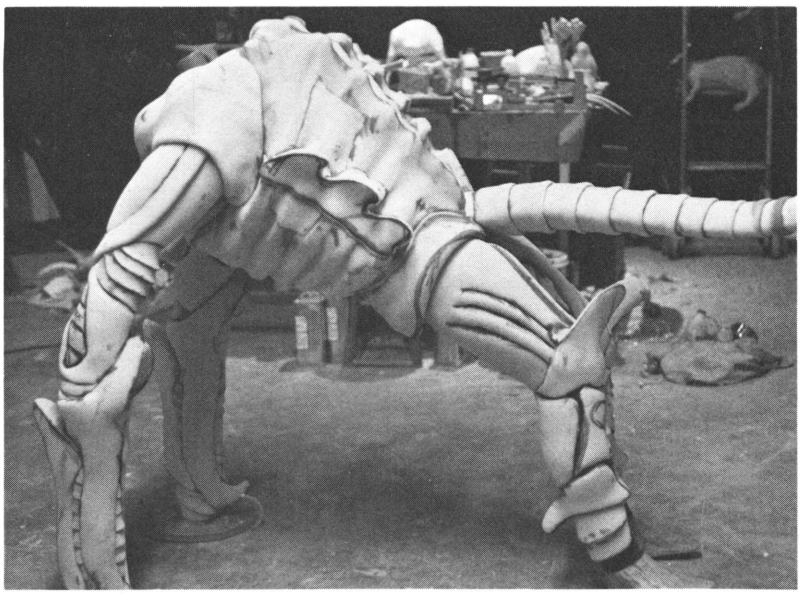




Zelda creature in attack mode. **Below** ***Carsillo suits up Floutz to play the part of Zelda.***

Despite the fact that NGE had no money to hire even an adequate crew for such a large show, they still managed to assemble a top notch group of professionals, all of whom volunteered their services. "Now we owe everyone in town a favor," Floutz laughs. "A lot of these people we met on other jobs so we were able to pull them in. Everybody was a big help, and we couldn't have pulled the show off without them. Between Pete and I alone, this would've been an impossible show. As it was, we still had to work night and day to get some of the stuff done," Carsillo says, "right up until the night before shooting began."

Creepazoid's primary monster set piece was known as Zelda. While Zelda once was a female human biologist, exposure to mutant amino acids precipitated a most unwelcome change in her physiognomy, and she now resembles a grossly oversized beetle. Faced with the prospect of constructing their first monster suit, Floutz and Carsillo decided to do everything



Zelda creature suit shown during construction.

in their power to remove the creature from a "man-in-a-suit" look. According to Floutz, it was he who actually determined that Zelda should be a "backwards suit," as he relates: "I've got to take credit for that, for better or worse. I've always wanted to make a backwards suit since I saw a movie called *Xtro* where the monster was handled that way, so I took that idea and tried to correct some of the faults it had in that film. To understand the backwards suit concept, imagine a person lying on his back crabwalking, with the monster's head facing backwards over the shoulders."

Because of the budget and time constrictions, Floutz and Carsillo decided to construct the monster's body out of sections of sheet foam built up over a body stocking. "We basically used foam construction to create the body over a mannekin that we sized up to match Tom's body, since he had agreed to play Zelda," Carsillo recalls. "Then we put a body stocking over the mannekin and cut and glued different thicknesses of polyurethane foam piece by piece to create the body form.

"After the foam construction was finished, we covered the body with four coats of molding compound in a stipple fashion to create a nice alien texture instead of the porous look of sheet foam, which would've made the monster look like a giant sponge! Once that was dry, we began to paint it. The director wanted something very dark and sleek, something that would look like it was hugging the ground, something very ominous, because he didn't want to reveal what it looked like until the end."

The director also wanted the monster to stand upright for certain sequences, which meant that the suit had to function both backwards and frontwards! "Throughout the film, the director wanted to keep the monster upright so it could attack with greater agility. When it's on all fours, it seems more vulnerable because it's so low," Carsillo says. Floutz adds: "When it's in any kind of aggressive state, it must stand upright, so I had to wear the suit frontwards for those shots. We made both the suit and the head reversible for this reason. The fiberglass helmet inside the monster head which fit over my own head had to be turned around to accommodate the repositioning – it was just a matter of unscrewing some bolts – while the suit itself was very adaptable to being worn the opposite way. We did have to change the grips around in the arm extensions, but all in all, it only took about ten minutes to change the direction of the suit."

The arm extensions Floutz refers to are one of the major innovations in his backwards suit design, serving to elevate the monster's head and upper body so it appears more menacing and less like a man in a suit. "We modified a pair of crutches," he explains. "We took off the original braces and substituted some we made ourselves from pieces of tubing so they would lock properly onto my wrists."

Other improvements were implemented by Floutz as he performed in the monster suit, as arduous and demanding a job as building the creature in the first place. "Playing the monster was a horror!" he says. "Still, when I walked in it, I tried to keep my hips parallel to the ground, because the *Xtro* suit tended to dip at the hips, which I always thought looked kind of funky. As a matter of fact, I had to work out to wear that suit because it weighed about 25-30 pounds by itself, before I put the head on. It was so hot in there under the lights that between takes, I'd fall asleep in the suit! The director would be looking for me to do the next shot and Pete would say, 'If you want him, you'll have to wake him up!' It wasn't until the last day of the shoot that I actually had to walk backwards. It was only a distance of about 30 feet, but we had to do two takes. I knew it would be hell!"

The monster's head itself was the heaviest portion of the suit, and created the greatest difficulty when Floutz tried to walk backwards in the suit – the wealth of mechanisms in the mask accounted for most of the weight. Floutz explains: "The head had eye blink capabilities, its lips snarled, its mandibles moved, and the jaw opened and rotated so it could appear to gnash its teeth. John Criswell supervised the mechanics, which were all cable controlled. In ad-

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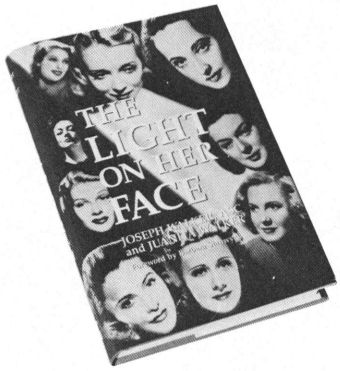

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dition to the vaccuformed dome that spanned the top of the monster's head, we used clear resin teeth set in dental acrylic, all of which added an additional ten pounds to the weight of the head, which weighed about thirty-five pounds total."

From out of the clear dome on the monster's head is born the hideous creature's child, Hector. The newborn child is a truly frightening mutant, combining features of a human baby with those of its monstrous mother. "What we wanted to show was that the baby was, at one time, a human, but halfway through its growth process it began to mutate into a monster," Carsillo explains. "We didn't get the script until after we began working on the show, and the baby was one of the first effects we did, even before we built the mother. Someone in the script remarks that the baby obviously started out to be human, but we had taken such drastic steps in the design of its mother to make her look non-human that it became something of a challenge to create a baby that would look both human and monstrous."

While Carsillo's decision to sculpt the baby in a crawling position was necessitated by the demands of the script, it created countless difficulties for Floutz when it came time to mold it, difficulties which ate up time and money from the already overtaxed schedule and budget. "The mold was really uptown!" Floutz laughs. "It ended up being a very complicated mold that had to be broken down into a number of pieces. The head alone was three pieces, the body was in six more, and then we had a plaster core inside to make the whole thing hollow so we could insert our mechanics, so it was a ten piece mold altogether."

Once again, the talented Criswell created the mechanisms which brought the baby to life on-screen. "John did an excellent job making the mechanics for

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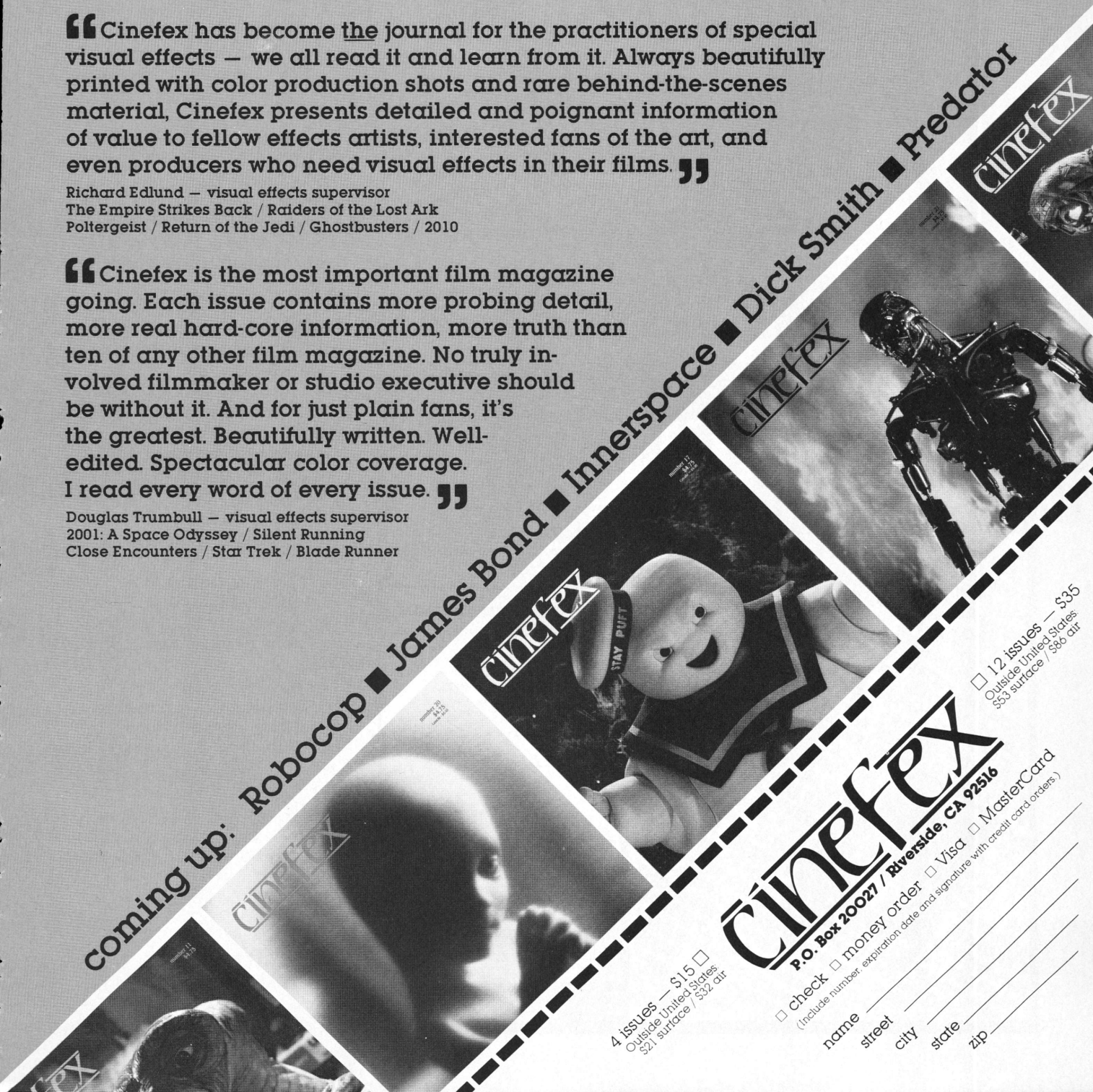

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the baby," Floutz says. "It had remote control X-Y-Z eye rotation, eye blink, it squinted, snarled, its mouth opened, closed and moved sideways so it could gnash its teeth, and it had brow movement. All of the mechanics fit into a head that's a bit bigger than a grapefruit! John worked for two months on the mechanics, right up until the last moment, and everything was very high-tech." "As far as mechanical babies go," Carsillo adds, "this has got to be one of the better ones on film!"

Besides the mutant baby and its mother, NGE also created several giant mechanized mutant rats, a number of appliance make-ups, an inflatable bladder head and hand, a rotten corpse and various severed limbs – with a little help from their friends. The appliance make-ups and bladder effects were part of a three stage transformation that befell anyone who happened to be bitten or sprayed by the monster during one of its attacks. First the victim's eyes changed, courtesy of contact lenses by Richard Snell, then the face aged thanks to appliances sculpted by Joe Dolinich, and in the third stage, the head expanded beyond all recognition with the aid of a special bladder head puppet built by Ed Yang. Bill Butler constructed an extremely convincing corpse, which served as one of Zelda's victims, using latex buildup over a real skeleton, while Ken Horn made most of the blood for the show. "Come to think of it," Floutz and Carsillo realize simultaneously with feigned horror, "we had to create virtually every kind of effect you can think of with almost no budget!" △

Computer Calculator for Cinematographers

by George Turner

That some of the most vital equipment comes in small packages was evident last March when the Academy of Motion Picture Arts and Sciences presented a Technical Achievement Award to DSam Ltd. for the Cinematographers Computer Program. The program gives quick access to a wide selection of photographic variables involving color, exposure, film length/time, focus, light and electricity, optics, macro photography, and speeds. It answers in seconds questions that otherwise require time-consuming calculating in a field in which time is the worst enemy.

At that time the program was housed in a lap-portable computer. In the meantime, inventor David Samuelson, of London, has further refined the program and housed it in a pocket-size Sharp computer. It's now called the Panavision Cinematographers Computer Program, a fact which flashes on the little screen, appropriately, like the main title of a movie. "It's rather like Dior," Samuelson beams. "Not everything has a Dior label."

Samuelson has poured a lifetime of cinematic knowledge into the little machine with the big library. His father was the pioneer British producer, G.B. Samuelson (1887-1945), whose pictures include the 1914 version of *A Study in Scarlet* and the 1925 *She,* and his mother was a film star. For 19 years he was a Fox Movietone cinematographer, and he only recently retired from his long-time position as a director of Samuelsons, an international motion picture supply organization. Author of several manuals and technical books, Samuelson is now a special consultant for Panavision.

The present program was in development for about three years. Valuable input came from Jac Holzman, formerly of Panavision; Bill Pollard, who developed some of the very special arithmetic; Harry Mathias, who conducted extensive field tests; and Mako Koiwi, who provided information from an assistant cameraman's point of view.

The first program on the menu is **Accounts,** which is used in calculating pay slips. It takes into consideration pay rates, overtime rates, minimum and maximum hours, etc.

This pocket-size computer houses the shorter program. The full program is available in the same format.* Below, left: *David Samuelson, developer of the Cinematographers Computer Program.

The **Color** program gives recommendations for filters for color correction and balance under various conditions.

Dimensions is used for converting feet and inches to metric and vice versa and is ideal for situations where it is not possible to get a tape measure from camera to subject, as when a Louma crane is being used. Enter any two dimensions of a right angle triangle and it will give the third. "It's Pythagoras put into a computer," Samuelson says.

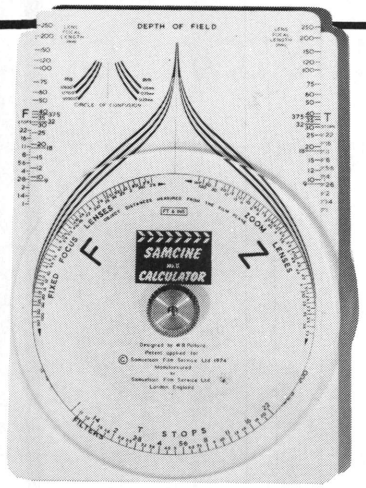
Diopters is especially useful with zoom lenses when diopters are being used to shoot close-ups. It will calculate what the focal scale will be when a particular diopter is placed on the lens, but figures which diopter to use, particularly when split diopters are involved. For example, if the focus is on 12 feet and a second plane of focus is wanted at three feet, it shows which diopters to use to get both planes of focus.

Exposure calculates changes in exposure. If the exposure for 24fps is known and it is necessary to shoot at 500fps, for example, the calculator tells what to change the exposure to. If it is necessary to reduce exposure by use of a neutral density filter, it tells what filter to use.

Film deals with film length and running times for 65mm, 35mm and 16mm stock. It can be used to change feet and frames to running time in hours, minutes and seconds, and vice versa, and it will aggregate the totals. It will give the number of feet in an odd roll of film, such as a short end, according to the diameter of the roll on the core. It also calculated the approximate shipping weight of film in cans according to the footage.

Focus, which Samuelson considers the most important program from the cameraman's point of view, calculates depths of field in either the normal manner or in reverse. It asks for the point of focus and gives the depth of field at that setting. An advantage of using the computer instead of the standard tables is that precise distances are used. Similarly, in dealing with lens focal lengths, *any* focal length can be entered – 29mm, for example – as well as the precise aperture.

"Circle of Confusion" as Samuelson notes, "is dependent on many factors, not the least of which is



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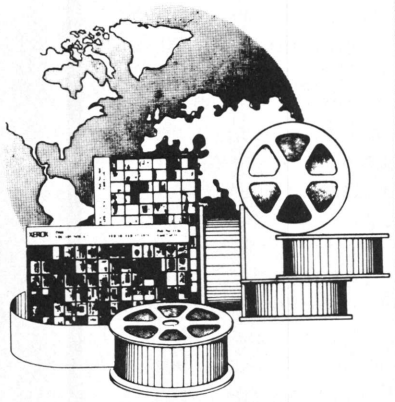

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'how sharp is sharp?' If you have a lens that is very crisp and hard and sharp, then what is out of focus will appear more out of focus by comparison, and that lens will appear to have less depth of field, in which case you've got to give it a higher circle of confusion. Similarly, if you've got an old lens in which nothing is very sharp and you have a diffusion filter on it, then you can have a very big circle of confusion. If you want to get the right circle of confusion and maximize the depth of field, it's necessary to look at the dailies and decide. Using the computer, you can fine-tune your circle of confusion."

Lens Type is designed to offer a number of calculations for depth of field that are not otherwise at hand. "There is a big difference in the depth of field between fixed focal length lenses and particularly large zoom lenses because of the physical size," Samuelson explains. "Depth of field is calculated from the entrance pupil position, not from the film plane, from which we measure. Therefore, if you have a lens which is a foot or more long, then the entrance pupil may be 10 inches in front of the film plane, so if you're focused on three feet you in fact have a depth of field of two feet, two inches. Using the calculator you can select the lens type." The calculator yields the near focus, the far focus and the depth of field from front to back. Depth of field can also be calculated in reverse. It makes it possible to bias the focus within the depth of field. Variables of individual lenses and other factors can be entered.

The computer contains a library of **Formats,** providing the dimensions of any particular film frame for instant reference.

HMI Lighting gives the safe HMI parameters. There are three parameters that affect HMI lighting: camera speed, shutter angle, and supply frequency. If any two of these are known, the computer will provide the third. For instance, if the camera speed and shutter angle are entered, the computer will calculate the optimum supply frequency. Example: If it is desirable to run camera at 19fps instead of 24fps and control it with the shutter angle, and the supply frequency shows (say) 60 hertz, and the maximum shutter angle is (say) 200, the computer will report that the optimum shutter angle is 171 degrees.

Lights offers various programs dealing with the efficiency of lights. For instance, if a lamp is of the correct color temperature for 115 volts and it is necessary to run it off 120 volts, it will yield the color temperature and several other items dealing with lighting and electricity. It is possible to work out various aspects of Ohm's Law and to add all the wattages of lamps being used in a given situation to find out how many amps of power are needed.

The **Macro** program supplies critical information dealing with close-up photography by extension. It asks for the width of the subject and the width of the image desired on the film frame. The latter can be supplied either by the actual measure of the image or in a percentage relative to the format. Example: the subject is .5 inches across, it has to be 50% of the width of an Academy frame, and the lens being used is 100mm. The computer will tell what the subject to lens distance is and how much extension is needed – in this case, nearly 13 inches. It will also give the magnification factor, the f-stop adjustment from the light reading, and the depth of field. It will further calculate the maximum depth of field possible to obtain and tell the optimum stop for the maximum depth of field.

"When shooting macro, there's a limit to how much depth of field you can get before defraction becomes more of a problem than focus," Samuelson explains. "In this case it's f.13.2. It then tells how much light you would have to have in order to achieve 13.2, then it tells what the depth of field would be – which in this case is .097 of an inch."

Optics is a program useful not only for cinematographers but for art directors, production illustrators, and others. Four factors affect the choice of lens angle: the width of the object (or screen in the case of projection process), distance from object to camera, the size of film, and the focal length of the lens. Given any three of these, the computer will calculate the fourth. For example, if a set is being designed and it is necessary to know how far back the camera must have a clearance to be able to take it in, the computer asks for film size (say, 35mm Academy), lens focal length (50mm), and the width of

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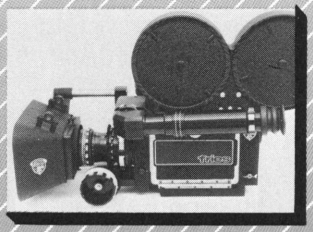

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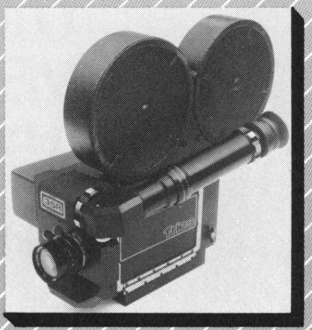

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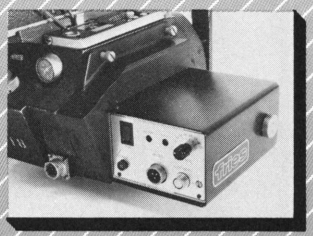

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the image (12 feet). It will report that the distance has to be 28 feet, 7 inches. Then the art director knows that he must allow that amount plus a little bit for the dolly. This program also converts focal length to lens angle, making it easy for camera people who work in television and are used to using lens angle rather than focal length to convert.

Speeds is especially useful in special effects photography, in that it calculates camera speeds for shooting miniatures, panning speeds, and event camera speeds. In the case of miniatures, it asks for the size of the full scale object and of the miniature and tells the scale of the model and the speed at which the camera should be run to simulate the correct speed. The event speed makes it possible to figure frame rates for time-lapse work. Example: If the event time is 10 hours and a screen time of 25 seconds is desired, the computer reveals that the camera rate is one frame every 60 seconds and the number of frames needed is 600.

Sun Times requires quite a lot of arithmetic from such a small computer, which contains a library of selected cities. Longitudes, latitudes and time zones from anywhere else in the world also can be entered. The computer asks for the date and whether standard or daylight saving time is in force. It supplies times of sunrise, dawn (for magic hour), dusk, and sunset. It also gives the angle of the sun at noon.

"All these programs are contained in one 32K ram card," Samuelson points out. "The computer comes with an 8K ram card, which is left free so the user can write his own programs on it. There is also a less expensive version of the program which I call the Depth of Field, Macro and HMI calculator, which only has those programs, which are all on the 8K ram card.

"That's my baby! It's something pretty much for the future. I'm no longer the youngest person around and I feel that it's going to outlive me by quite a long way, something to leave behind for the young cinematographers."

The program is distributed by Panavision, Inc., 1861 Oxnard Street, Tarzana, California 91356. △

Color tests from* Working Girls *illustrate available directions in coloration.* Top left: *As scene appears in picture.* Top right: *Timed to emphasize red/yellow.* Lower left: *Blue emphasis.* Lower right: *Magenta emphasis.

Meaning of Color Timing

by David Pultz

During filming, a director of photography can take great pains to create a certain look for a particular film. With lighting and exposure set and choice of film stock and lenses carefully made, the basic creative visual elements under the camera's control should produce the desired results in well timed dailies. In the later stage of timing, however, when it comes to the final answer print from the dupe negative, the sought-after look can become completely altered in terms of color and density.

What can happen in this critical final stage of the visualization process? Cinematographer Ernest Dickerson (*She's Gotta Have It* for Spike Lee; *Brother From Another Planet* for John Sayles) relates this story, "I had a problem with the movie *Krush Groove* in that when schedules were changed they timed the answer print at a time when I could not possibly be there. Everything I had tried to do in terms of color saturation totally went out the window because somebody else timed it. Somebody who was not intimately involved with the timing. I was very unhappy with the way it turned out because it didn't have the look that we started with. It was timed very dark. You see how valuable it is to carry it all the way through."

Adamant about the importance of the working relationship between the cinematographer and the timer, Dickerson continues, "I think it's very important that the D.P. work with the dailies timer and all the way into the answer print stage with what you have. You might establish things in dailies, but that still doesn't mean that it's going to be carried through. You have to have consistency."

Dickerson expresses two very basic concerns that are shared by others interviewed here: one, that the timer, whether in the dailies or answer print stage, understands the look the cinematographer is attempting to achieve in terms of color and density; and two, that there be consistency regarding the timing from the dailies through to the answer print. A basic requirement in achieving these goals is that a rapport – a working relationship be established between the cinematographer and the timer.

Perhaps the most important information that the lab can provide the cinematographer, particularly in regard to dailies, are timing lights (also called printer lights). Referred to in terms of

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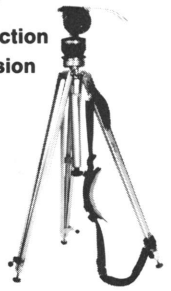

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points, timing lights are a set of three numbers that correspond on a scale of 1 through 50 to each of the three primary colors: red, green and blue.

Timing lights indicate the light intensity that each color has been given during the timing process. The combination of three numbers controls the overall balance of color as well as the total intensity of light (density) applied to a specific section of the negative, which can be an individual shot or group of shots.

In the initial stage of timing either original, dupe negative or CRI, a timer will wind the film through a color analyzer which has a closed circuit monitor that produces a positive image of the negative. The timer then assigns what he or she feels is the best light for color and density. In most labs a computer hookup with the analyzer, such as the one developed at Du Art Laboratory, records the assigned light for each scene along with the footage and frame where the timer has cued it to begin and end. Once the negative is timed, the information stored in the computer is transferred, usually by paper tape, to the computer of the printing machine.

After a print has been made from the initial timing, a second "corrected" print can be made. In this stage the timer can make adjustments to the color and density of any particular shot or scene (or to the overall balance of a film) by examining the print over a light bench. Using a magnifying glass, the timer will apply color correction filters to a shot to get an idea how many points in any direction a correction is needed. With a computer hook-up similar to the one used on the analyzer, the desired color or density correction can then be made by applying the correction to the previous light. New timing information is then generated and a corrected print can be made.

The printing system most commonly in use today is known as additive printing. In this method the light from the printer lamp is split up by means of special dichroic reflectors into the red, green and blue components. Each color is then controlled by valves that open and close in varying degrees according to the lights (1 through 50) assigned to it by the timer. During printing, as the negative and raw stock pass over the printer aperture, the lights change in combination at the exact frame (timing cue) predesignated by the timer for the specific shot or section of the negative.

In timing and printing color negative, the lights are such that the higher the number, the more light of a particular color passes through the printer valves striking the negative and print stock. Increasing or decreasing any of the three primary colors in relation to the other two will change the balance and alter the color in the direction desired. However, a numerical increase in the red value, for instance, results in a *decrease* of that color on the positive print, leaving its color compliment which is a combination of the remaining primary colors – blue and green, or cyan. Similarly, green has a color compliment of magenta (red-blue) and blue has a compliment of yellow (red-green). In order to add a particular primary color to the positive print, the light on the current balance must be lowered. A balance of 24-32-20 (RGB) can have the red value increased in the final result by decreasing, for example, the numerical value by two points, thus giving red a light of 22.

In changing print density the same principle applies. To make a scene darker overall and keep the same color balance, an equal increase of all three numerical values is necessary, and to make it lighter an equal decrease is necessary. (Note: timing black and white negative involves only assigning density values.) In additive printing six points is equal to one camera stop, and a light of 24-35-20, for instance, can be made ½ stop darker by adding three points of density, resulting in a light of 27-38-23. Similarly, it can be made ⅔ stop lighter by subtracting four points resulting in a light of 20-31-16.

All labs have a standard light that is normally a mid-point on the 1-50 light scale. The light is applied to a lab color control strip called a China girl, whose purpose is to keep a standardized reference for ideal normal color and density balance. The China girl light is generally anywhere between 24-24-24 and 27-27-27, and depending on the lab could vary outside the scale midpoint. Unfortunately, there is no industry-wide standard for China girl lights.

In the dailies or "front end" stage of lab work, a print-out sheet listing the timing lights and cue footages will almost always accompany

the dailies. The most important information they provide is the overall consistency of the exposure, and in reading timing lights it is important for the cinematographer to know how to interpret any given set.

Generally, the green value is considered to indicate exposure most accurately because in both daylight and tungsten light the presence of green is the most consistent of the three primary colors. A light anywhere between 32 and 35 in the green value on original negative is considered within normal range, and anything higher or lower is over- or underexposed. A light of 25-33-24, for instance, is within normal range, while a light of 31-39-30 would be considered about 1 stop overexposed. It must be noted that this system does not apply with discontinuous light sources such as mercury vapor or sodium vapor lamps.

For many D.P.'s, preproduction lighting and exposure tests are of vital importance. Cinematographer Ed Lachman (*Making Mr. Right, True Stories*) explained it this way, "It's important for me to shoot a battery of tests before I start a production. One, to create a rapport with the director that I'm working with to show him the kind of approaches we could use towards the look in the film; and two, to have the lab understand what I'm going after so I have some kind of consistency day in and day out with the lab when I'm off on location or I don't get to see dailies every day; that if they tell me where my printer lights are, when I talk to the lab, I know where I am.

"It's very important for me to understand where any printer lights are, to shoot for a certain printer light so I know where my exposure is because obviously those printer lights are representative of exposure and the look in the rendition of colors." Lachman says, "I would say that process – the printer lights and the timing is as important as my exposure meter."

For cinematographer Gordon Willis, ASC, (*The Pick-up Artist*) consistency in regard to printer lights is the most important aspect. "There are some D.P.'s that like everything timed from day to day and from moment to moment. My choice is to pick a set for the entire movie. Then I make adjustments within the lighting structure and exposure structure to work against that set of lights. Then, if I make a mistake or if I don't like something being done, it's easier for me to make adjustments based on that," says Willis.

"I prefer staying on one set of lights for a movie, or possibly two, one exterior, one interior. The timing is very important to me from the standpoint that once it's set, I expect the laboratory to maintain a standard so that there's not a major drift from day to day – so that the repeatability and consistency is there from day to day."

Willis initially relies on the timer's judgment in establishing a "normal" look for the dailies. "Usually I won't give anybody a set of lights at that point. What I'll say is, 'time this to what you consider normal and make one three points darker and one three points lighter.' And then generally, based on whoever did the timing, 'that's fine, do that,' or 'make an adjustment related to yellow or red,' or whatever's going on, but rarely do I get into giving the timer 'the light.' I usually let him establish it based on what I've discussed and I'll make adjustments based on that," says Willis. He adds that, "when the picture is finished, in all probability, I stay on the same set of lights."

The only negative comment on shooting pre-production tests came from cinematographer Judy Irola (*Working Girls* and *Dead End Kids*). "I can't say that you learn a whole lot from the tests," she says. "It's very funny, but tests are something I've done a lot and you sort of throw them away. I don't know why tests don't work out too well. Maybe they tell you what you know, and then when you actually shoot it, – I think I get a little more outrageous. I find tests are to satisfy a director or producer."

Regarding printer lights, however, Irola agrees to their importance during shooting. "At the end of the day I look at the printer lights before I look at the dailies because then I'm not surprised. I know from the way I lit the scenes and also I know from just the way I exposed the film where it should be."

Achieving consistency in color and density can be just as difficult in the answer print stage as in dailies. Cinematographer Michael Ballhaus, ASC, (*The Color of Money* and *The Glass Menagerie*) contrasts his experiences with timers in the U.S. and in

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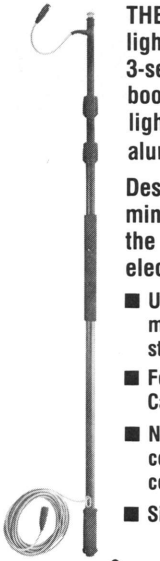

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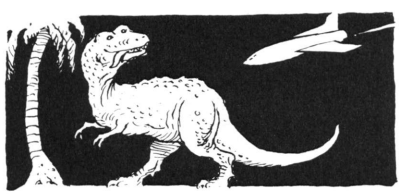

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Germany. "I had a little problem when I came over here because over there first of all, the timer who did the dailies also did the answer print, so he already knew a lot about what I wanted. When we started timing [the answer print] he was informed about it. That's different here. A lot of different timers are doing dailies, so it's not always the same. Sometimes it is, sometimes it's not.

"The second difference is that I used to sit with the timer on the Hazeltine – not that I'm trying to tell this guy how he's to do his job – these guys know better than I do – but sometimes there's no way he can know what I want. There's just no way," says Ballhaus. "Sometimes you look at the negative – sometimes you don't even know if it's day or night. And then I'm not looking for a 'normal' look. That means that I don't want it neutral – normally you go for the faces and you kind of make it neutral. Sometimes it's just not what I want. One example: I was shooting in a fast food place in L.A. under yellow fluorescent lights, and that look was great and wonderful for the story. They tried so hard to make it neutral, it was just terrible. I mean, how can the timer know I wanted yellow? So there are places where the timer needs help."

Ballhaus says that he prefers one-light dailies for most movies he shoots. He reports that in *The Color of Money* something like 70% of the movie takes place in pool halls so the most constant color was not the (actor's) face, but the green of the pool table. "The faces go in and out. Sometimes they get hit by the greenish bounce lights from the table, sometimes from fluorescent lights. So the color on the faces change a lot and that's what I was trying to tell the timer that in this case it's not the face, but the table," Ballhaus said.

All five cinematographers interviewed expressed a preference for shooting ½ to 1½ stops over the E.I. rating, producing timing lights anywhere between the high 30's to the mid-40's. The general feeling is that overexposure seems to produce better color saturation and grain structure, which is of particular importance when making a CRI or dupe negative for release prints. Willis states that, "I guess I probably shoot for the dupe more than the original, meaning that, at one point I shot thin negative – I shoot relatively full negative because I'm more concerned with the dupe now than I am the original. So negative is, in fact, relatively full so that the dupe comes back representing the original as closely as possible," and he adds, "I rarely shoot thin anymore."

Lachman says that in filming *True Stories,* "I was going for a saturated look, so I was trying to work with very high printer lights to create this kind of super-real world which these people inhabited. I went with 5247 and found I could get saturation with high printer lights and using a polarizer filter and graduated filters. I rarely use filters but in that case it worked out."

Making Mr. Right is another example in which Lachman uses a combination of 5247 and high printer lights. "I wanted to go for a 50's Douglas Sirk look. I was trying to capture a *genre* look of a tropical film so I went with a slower stock so the colors would be more saturated," he reports. "I was shooting printer lights in the mid 40's and lit much flatter than I normally light to create a studio look to the film. I used more direct light than bounce light and I also used gels to create contrasting colors."

The bordello scene from *Working Girls* illustrates in dramatic terms some of the timing options available for creative color usage. Printed from Eastman 5349 CRI onto Eastman 5384 positive print stock, the original lighting, according to Irola, was meant to convey a lush green and theatrical feel. The first frame represents the timing of the scene as it appeared in the film. The other timings were chosen as representative of some directions in coloration most commonly requested by cinematographers: red-yellow gives a very warm feeling and accentuates the lushness to a high degree. Blue works just the opposite, giving a distinct coolness to the scene. The magenta frame, being the color compliment of green, works against the original lighting and tends to neutralize it.

The creative possibilities inherent in timing are not always used to full potential but can best be brought about through close collaboration and communication between the lab, the timer and the cinematographer. △

The author has been working for Du Art Film Laboratory in New York as a timer for the past nine years.

Visible Invisibility for *Predator*

by Les Paul Robley

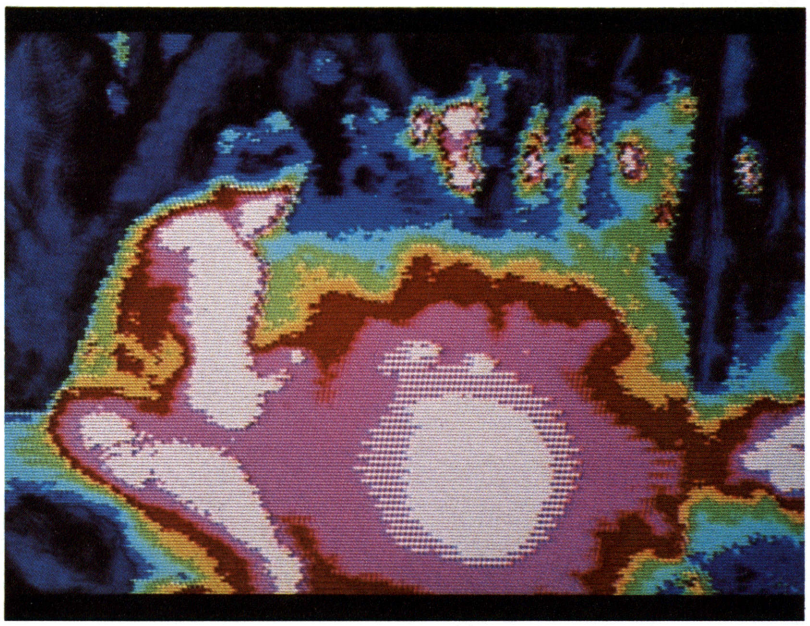
R/Greenberg Associates of New York was responsible for the creation of the invisible alien terrorist who battles Arnold Schwarzenegger throughout *The Predator.*

R/Greenberg's job was to create the creature's cloak of invisibility, its heat-sensing POV and various glowing blood and electrical spark effects. The first effect was created by filming the actor who played the creature in a pre-fabricated bright red Spandex suit, possessing the exact same shape and dimensions as the sculpted rubber monster suit worn while in its visible stage. Even though red is the worst color from which to pull separations for traveling mattes (it possesses the lowest gamma on color negative), the suit had to be a brilliant red since this is the farthest opposite spectral color from the predominant green masses found in the jungle or the blues in the sky overhead.

Working closely with producer Joel Silver and director John McTiernan, visual effects supervisor Joel Hynek and Eugene Mamut developed the look of the "camouflage effect" incorporating contour lines, like age rings in a tree, which allow the Predator to be invisible yet defined by a distortion of the background he moves past or through; as if looking through a fluid lens which changes shape with the moving subject rather than a hard lens.

Greenberg's Elicon Motion Control Remote System was used on location in Mexico to provide the necessary background footage to distort and composite the image of the predator. The distortion in 70% of the predator's scenes comprises a reduction of the background used as camouflage, 20% of the scenes use an enlarged background as camouflage and 10% of the scenes use a panning camouflage, each according to the emotional effect required.

During the initial 6-week shoot, the suit's redness was often enhanced with red-colored lights to reshape itself into this totally unearthly being resembling a crablike sunflower on top of a torso and allowing it to blend further with the scenery. This was to be filmed as an insert shot. The following live set-up would use a positionable stunt head on the actor which corresponded with the mechanized head for scene continuity.



Heat vision effect as seen from the Predator's point of view, a fine example of Greenberg electronic compositing.

At the first stage in the filming, the actor who played the creature was photographed wearing the red suit in the jungle exterior. Next, the actor left the frame and an identical take was repeated, this time recording only the background. Finally, a third take was made using a 30% wider lens on the camera. These three negatives were later optically combined, resulting in a composite which revealed a vague outline of the creature moving through the greenery as the background bent around its shape. When it stopped, it vanished completely.

The effect desired was that of a "Fresnel lens" look where the light appeared to bend around the creature. This is why a 30% larger background plate was filmed. This created a wider environment than was originally seen in frame. "It was as if you were taking a Fresnel lens and moving across the environment," said Joel Hynek, visual effects supervisor at R/Greenberg Associates. "As soon as he moved, we'd get all these weirdly distorting shapes and textures of the jungle.

"We worked out a program between the Computer Generated Imagery department and the CompuQuad printer [a four-head Academy Award-winning optical printer computerized on 17 axes]. We put in parameters for the size of the (red-suited) man, how big he was in the beginning and how small he got at the end, what part of the frame he traveled to, how long he took to get there, etc."

After pulling a set of mattes off the red creature (using a process similar to blue screen), Hynek took the silhouette and divided it into anywhere from eight to 15 concentric rings. The size of the man determined how many of these concentric slices were needed. Depending on where he moved in the frame, if he reduced three times his

Frame blow-ups show creature running towards camera.

motion control cameras, and notes their limitations."

Making the concentric mattes required at least ten steps to finally obtain an automatically aligning set. The optical department generated 8 to 15 separate clear-core silhouetted inlines (the opposite of an outline) from the black-core matte. The first concentric ring was an inline which followed the body's outer edge. The next one was the same distance away as the first, only smaller. This continued until concentric rings ended up as a dot in the center of the creature's body. In order to give it a 3-dimensional appearance (somewhat like a contour map), Greenberg's optical crew made the outermost rings smaller and the innermost wider. This added to the effect of the background bending around the Predator, causing it to ripple as it moved.

The background plate was photographed wider so that when it was reduced for the Fresnel lens effect, the frame edge wouldn't be visible. First, the wider plate was blown up or enlarged to match the normal plate. Thus, in the first outer ring (or, the inline which followed the creature's body), one saw almost exactly the same image as the normal plate. The wider plate was then gradually reduced for each corresponding ring until a reduction of four times the background image comprised the center of the monster's body.

"By starting with a plate that was 30% smaller," Hynek continued, "we could achieve a greater range in reduction by first blowing up to match one-to-one, and then reducing. The main thing we wanted was to have a different image in each of the concentric mattes, whether by position or size. The best effect achieved was by size and it looked the best while reducing. Sometimes, if we didn't have a wide plate, we'd blow-up the image so it resembled moving a magnifying lens across the environment." It appeared as if the light was coming through the creature and being bent.

There were ten concentric clear-core mattes for each figure and each one had to have a background of a different size. The ring closest to the inside of the body was almost one-to-one. Moving down the line of rings, the background reduced more and more. The whole effect resembled a television camera pointed at a TV screen and seeing a series of TVs getting smaller and smaller to infinity.

Depending on how the mattes moved around the center of reduction, it gave different looks. When the monster stopped moving he became invisible because the oblique jungle textures seemed to meld into one.

"Eugene Mamut worked out a way of rotopositioning the wider plate," acknowledged Hynek. "If it was just a straight reduction, it would center on the center of frame. We needed a center of reduction to always follow the man around so you'd get a nice lined-up distorted look."

During the first 6-week shoot near Puerto Vallarta, focusing red light on the costume worked well in separating it from the background. The green leaves absorbed the red, while the suit kicked it back into the lens, creating a well-delineated matte. However, the main crew felt it was taking too much time to set up the extra red lights. During the project's eight month hiatus, Hynek's crew found they could generate mattes with the red suit under natural lighting. So, when they returned to Palenque for the second five weeks of shooting, the red lights were dropped and the creature was photographed in a normal white sunlit environment. "The idea was to interfere with Don McAlpine's lighting as minimally as possible so that effects shots still looked like regular shots," he added. "This meant a little rotoscoping now and then to fill in the red monster where he'd get shadows under his armpits or crotch area."

Stan Winston's creature designs were made to look naturalistic and humanoid. [For the times when the Predator is visible.] Explained one of his effects technicians, Shane Mahan: "The creature is very cultural-looking, a mix between a Spartan and an African warrior. It wears stylized technological weaponry. The large back of the head resembles Rastafarian dreadlocks. The face has movable pincer-like mandibles which fold and flare out like a spider's mouth. The eyes are deepset with no nose . . . It's a very unusual look."

Expressions on the face were achieved via radio controls operated near the camera. Steve Wang took Winston's drawings and devised some of the machinery and assorted hunting gear which the creature wore on its back.

The fighting spurs located within a groove inside the Predator's arms were made of fiberglass and spring loaded. Actually dangerous, the deadly-looking spikes would lock into position when the arms were flipped

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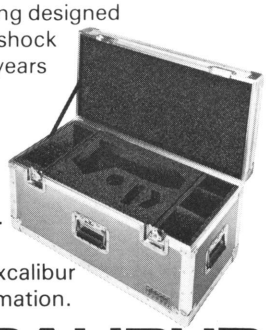

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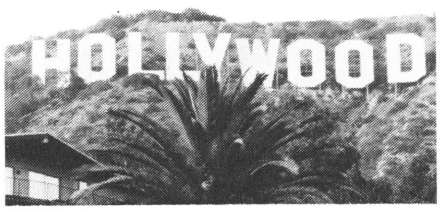

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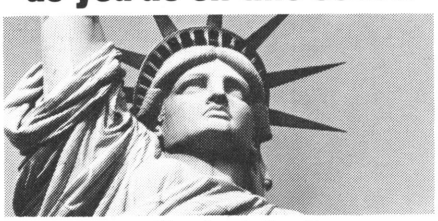

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down, becoming long fighting blade extensions on both appendages. The blades could then retract back into place.

Another problem in Palenque dealt with mud and water. "The red spandex suit was a simplified version of the real suit with the same general shape and configuration," explained Mahan. "We had to keep it clean, which was a real problem shooting in a swampy, muddy area. It was tough keeping the red surface clean and dry . . ." necessary for the crew at Greenberg to pull solid black clear-core mattes.

The real trick was to combine the effect with a camera move. This meant any movement in the normal shot would have to be repeated with the exact same motion for the plate without actors and the wider plate. This was the reason the motion-control camera was brought to Puerto Vallarta: to re-track the background plate.

To save on expenses, the studio opted not to use the computer tracking system in Palenque during the second shoot. Hynek's crew managed to work out a way to track the system manually using a group of television monitors. They recorded the first move with the red creature on videotape, generating visible time code numbers right on the screen. After director McTiernan picked the take he liked, the operator manually moved the camera on a dolly or gear head, recording the background plate without anyone in it. He visually linked the new move with the old by watching both of them on video monitors mounted side by side.

The method wasn't easy. It required a lot of patience and button pushing at the right time. But it worked. What they ended up with was two video images, each with time code, that could be compared after the shot to see if one matched the other. On the CompuQuad printer, the roto-positioning ability enabled Mamut to take the red suit pass and the wide plate pass and position them frame for frame so they both matched. At least three takes were necessary to align one shot to the other.

"This is something that I don't think has ever been done before and we weren't all that confident about it at the time," said Hynek. "But it seemed like the only way we were going to make it work. The camouflage effect was somewhat forgiving in that if there's enough motion going on and we haven't matched exactly, viewers won't really be able to tell. We were afraid of slow motion situations when movement got very small. It's very easy for the eye to pick up discrepancies. But we were quite happy with the results we did get and achieved the maneuverability to roto-position one image over another on the CompuQuad such that what you saw inside and outside the red guy during a camera move would match."

One effect in particular was probably the most complex in the movie. Schwarzenegger is in the foreground standing against a tree and the Predator (with cloaking device on) is crawling down head-first behind him. All the while the camera is dollying and panning on several axes at once. This was a real killer of a shot, not only for the characters in the film, but for the effects people too.

The tree was tipped at a 45 degree angle so that Kevin Peter Hall, the 7'2" actor who portrayed the Predator in the Stan Winston makeup, could climb face down in safety. Arnold leaned back to complete the forced perspective. The crew tried filming Arnold and the Predator together but encountered depth of field problems – either the monster or Arnold's head was soft in the frame. So, they shot sharp-focus passes on each of them separately, then filmed a plate with no one in frame. They duplicated the camera movement in each plate since all three had to match via roto-positioning. Back in New York, the optical crew cut a rotoscoped matte alongside Arnold's head where it passed in front of the creature. Then, a set of concentric mattes was pulled off the red-suited figure in the usual fashion. The wider background plate was finally aligned via roto-positioning to match the take with Schwarzenegger.

Another elaborate Greenberg effect consisted of all the point-of-view shots of the Predator. The monster sees through a heat-sensing device which reads the heat patterns off objects in its path and reproduces them in color on a screen. It may be the first time this extensive an effect has ever been tried in such a remote location. Greenberg's

crew initially considered a few different methods to pull off the effect, including infrared photography, black and white combined with additive color techniques, and distortions via color separations.

Since the Predator sees things differently, it was thought the infrared stock would cause the chlorophyll in the plant greenery to turn white and the other colors to shift weirdly. The crew found there is no film that can see in the wavelengths that people emit. In the heat of the jungle, people are so close to the actual exterior temperature that the film would essentially expose itself and not differentiate between the two. In addition, the film really isn't sharp enough for pulling mattes anyway. And the complications involved in obtaining large amounts of the stock are extreme. So, the infrared film avenue was quickly abandoned. They ruled out the other two methods as well, since the crew wanted to create real thermal images.

A company called Inframetrics makes thermal scanners for video that give excellent heat images of objects, including people. Thermal vision effects supervisor Stuart Robertson constructed a thermal video-film camera configuration consisting of a Model 600 Inframetrics Thermal Scanner at right angles to a normal 35mm motion picture camera. The two were tied together on the same optical axis via 70/30 beam splitter arrangement. Seventy percent of the reflected image went to the heat camera and 30 percent was transmitted through the glass into the film camera. They chose this high reflectance ratio because the best images obtained with the thermal camera corresponded with the maximum light transmission through its lens. Basically, they strove to get as much of the image as possible to the thermal camera, which meant about a two-and-a-half stop light loss to the film camera. Since the background film image was purposely being underexposed and processed as a high contrast image, the loss of light didn't matter. Still, high-speed Eastman 5294 was selected as the film camera negative.

Because they were dealing with video, the film camera had to overcrank at 30 frames-per-second. Back in an air-conditioned truck, a technician

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had another camera filming the video monitor that was hooked to the thermal camera. They ended up with a heat image and a normal film image of exactly the same thing – but on film. A Panavision field-to-frame synchronizer tied together both cameras.

The crew even had to hose the jungle down with ice water before shooting. Recalled Hynek: "Shooting IR photography in Mexico and trying to make a body stand out is not the easiest thing in the world. It took us a day to figure out that hosing things down with ice water, or shooting in early morning hours, would give good results."

At first, the stronger video colors were superimposed optically over the underexposed normal image. They soon discovered the two could be composited onto video. This proved okay since the thermal image was already a video image, and the lab had been experimenting with ways to process the background film image in order that it blend together better. Going back to video made this composite all the more realistic.

The heat image itself was basically a black and white image. Whatever was hottest was brightest. But the Inframetrics decoder broke it down into gray levels and assigned a color to each of these levels. There were approximately twenty different color palettes to choose from. Some were very exotic, designed to show subtle differences in temperature, but not necessarily to give the best defined image. A simple palette was selected so that audiences could more easily relate to the heat-sensing characteristics.

The digital encoder was also capable of frame averaging. It could average the heat image over 2, 4 or 16 frames, which gave a very interesting "heat-wave" look. Images didn't change at 30fps, but at 16 or 4fps. There was still information recorded at 30fps, but it was being averaged. For example, when a hand moved quickly near the lens, it left a simulated heat trail. When weapons fired or grenades exploded, it produced dazzling effects, to say the least. Dealing with video, the results were seen immediately.

One good thing about being tied together on the same configuration

meant that any motion existed the same for both. There was no limit to what could be accomplished. If one camera panned, the other followed suit. They even mounted the contraption onto a Steadicam.

Eric Chamberlain and Ted Churchill figured a way to mount the cameras without throwing the Steadicam out of balance, even though it added a lot of weight. There were several shots made in Mexico with first camera assistant Rob Agganis chasing Arnold through the jungle with the heat camera configuration mounted atop the Steadicam, looking like some weird alien weapon. Running after them were Infrared camera operators Pete Sekelick and Frank Bryson, both adjusting a little box of encoders and scanning equipment. Behind them trailed hundreds of feet of video cable powering the units. Lastly ran a dozen more people making sure the cables didn't get snagged on anything. No wonder Arnold was in such a hurry.

Electrical effects were animated on the visible monster only. They tried them on the camouflaged creature but found they obscured the invisibility effect too much. Sparks were added with the "photo-roto" technique.

Nine-by-eleven-inch black and white prints were made of each frame of film that required spark effects. The unexposed paper print was 3-hole punched with standard animation cel holes. The animation crane was turned into a giant photo enlarger so that each picture printed onto the photo paper would be registered by the pins in the camera and the pegs on the table for frame-for-frame steadiness and accuracy.

A few of the processes used in *Predator* can be considered minor innovations which add to the various categories of special visual effects. They're a credit to the men and women who worked on the grueling project, who, like Schwarzenegger's character in the film, never gave up even in the face of insurmountable odds. △

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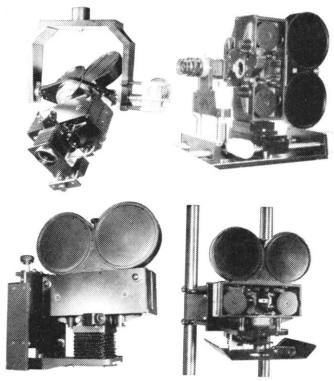
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The Trip to Bountiful
Produced by Sterling Vanwagenen and Horton Foote.
Directed by Peter Masterson.
Photographed by Fred Murphy.

The Trip to Bountiful takes us from French Impressionistic dreams of youth to American Realism, urban and rural.

Geraldine Page gives a moving performance as a woman with a strong desire to see her hometown once more before she dies.

Horton Foote's adaptation of his stageplay is well directed by Masterson. Fred Murphy's cinematography gives it the look of an American classic.

• • •

The Bedroom Window
Produced by Martha Schumacher.
Directed by Curtis Hanson.
Photographed by Gil Taylor, BSC.

Steve Guttenberg is having an affair with Isabelle Huppert, who witnesses an assault on Elizabeth McGovern. Huppert views the incident from Guttenberg's bedroom window, but can't report it because it would reveal her infidelity. Guttenberg takes it upon himself to report the assault to the police when it looks as though it could be linked to a murder.

Curtis Hanson wrote and directed this tangled tale of suspense, paying homage to Hitchcock and Truffaut as the story unfolds.

Guttenberg seems miscast, but the women are marvelous, especially McGovern. Incredibly romantic lighting makes *The Bedroom Window* worth looking into.

• • •

Break Every Rule: Starring Tina Turner
Produced by Jacqui Byford.
Directed by David Mallet.
Photographed by Mic Knowland and John Metcalfe.

One of the most important aspects of any music video is to showcase the talents of a performer. In

Break Every Rule, David Mallet has followed all the rules.

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Journey Into Space
Produced and directed by Craig Jackson.

Craig Jackson, a staff member of NASA's film and television division, has taken highlights from the first 24 space shuttle missions and set them to music.

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This is a "must see" individual achievement. Turn it up loud on the HiFi and marvel at some truly far out images.

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Phillip Marlowe Private Eye: Finger Man
Produced by David Wickes.
Directed by Sidney Hayes.
Photographed by Michael Reed, BSC.

From the HBO series, based on Raymond Chandler's short stories, comes this extremely stylish video.

Powers Boothe plays Marlowe with an unexpected elegance. Also elegant is Maurice (James Bond) Binder's title sequence.

This very glamorous, very British, Marlowe can also be found on another video called *The Pencil.*

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Waiting For the Moon
Produced by Sandra Schulberg.
Directed by Jill Godmilow.
Photographed by Andre Neau.

Waiting For the Moon is a fictional work, based on the close friendship between writer Gertrude Stein and her secretary and companion, Alice B. Toklas.

Andre Neau's photography provides a pleasant backdrop to Mark Magill's sometimes wordy script. The French countryside and period flavor of the film will hold your attention, even if Stein's punctuation doesn't. △

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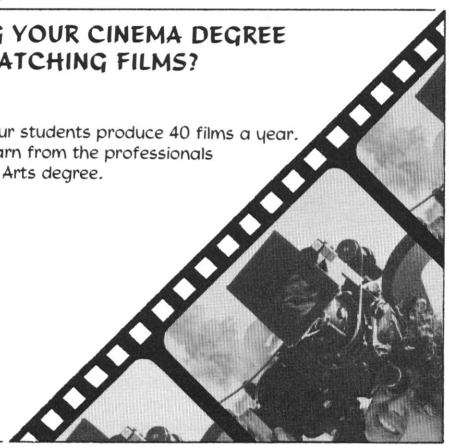

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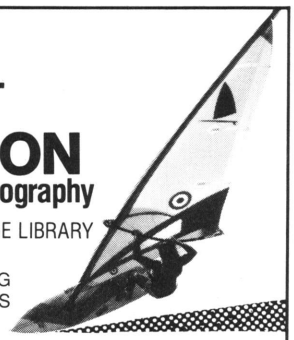

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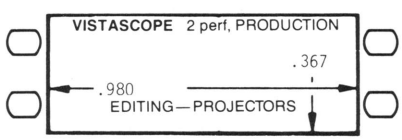

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—George Turner, Editor.

From the Clubhouse

The ASC Awards committee has announced that this year's cinematography prizes will include four categories: one for a motion picture theatrical release; two in the television realm, episodic and mini-series or specials; and a special presentation this year for a lifetime of achievement in the field.

According to Michael Margulies, committee chairman, the presentation will take place this year on Sunday, March 6, 1988. Entries for consideration in television must have been seen during the year from June 30, 1986 through June 30, 1987. Theatricals must have been on public view in Los Angeles during the calendar year of 1987.

• • •

Caleb Deschanel, ASC, had a narrow escape recently while directing Island Pictures' *Robinson Crusoe* in the Seychelles Islands near Madagascar in the Indian Ocean. While working on an underwater sequence, he stepped on a *Synanceja,* the venomous stonefish that haunts the Indo-Pacific reefs.

A member of the scorpionfish family, this lumpy and sluggish little creature lives a quiet life on the bottom, effectively camouflaged to be inconspicuous in sand or coral. It would be an ideal meal for a predatory fish or moray eel except that it bristles with needle-like spines which deliver, at the slightest touch, a deadly nerve poison. For swift efficiency this venom rivals that of the cobra. There is an antivenine, but it was not available on the remote island where the film company was headquartered.

After several weeks of serious illness, Deschanel was able to return to finish the location shooting. He then went to Yugoslavia to film interiors and finally to England for post-production work.

• • •

The ASC hosted an open house and discussion forum with the Art Directors Club of Los Angeles on October 13. The ADLA is composed of artists who are involved in the designing of television commercials, motion picture graphics and advertising art. Some of the art directors attending are employed by advertising agencies while others operate their own art studios.

ADLA president Steve Banks, executive producer of Wright-Banks Films of Los Angeles, joined ASC president Harry Wolf and program chairman Jack Cooperman in moderating a lively discussion of current and probable future techniques used in TV production. The group explored the various HDTV systems now being used in Europe and Asia, noting the danger in prematurely adopting any present system as the industry standard before other avenues have been investigated more completely.

The wide divergence in quality of various film/tape transfer methods received attention and there was a general agreement that any agency producing commercials should insist upon a contractual clause specifying a transfer system agreed upon by the art director and the cinematographer.

• • •

Behind the Lens, an association of professional camerawomen, has released its third industry directory (which is free to all motion picture and television personnel). The increasing number of active members, all of whom must have had three years or more of professional camera experience to be eligible to join, illustrates dramatically the growing influence of women in the arts and crafts of moviemaking. Brianne Murphy, ASC, is the best known member, having been director of photography on numerous features and TV shows.

There are, however, 45 active members, including directors of photography, operators, first and second assistants, underwater and special cinematographers, Steadicam owner/operators, documentarians, matte and visual effects specialists, and still photographers. Associate members are industry professionals in related fields, such as producers, directors, editors, sound technicians, etc. Apprentice members are beginning professionals and students. Supporting members – individuals and companies in the industry who actively support the advancement of camerawomen – include several members and associate members of the ASC. △

Science & Art of the Movies

The "terror dog" from* Ghostbusters *gets in-depth treatment at the California Museum of Science and Industry.

Photo by Boss Films, Inc.

Connoisseurs of movie and TV special effects are having a prolonged field day in Los Angeles at the California Museum of Science and Industry. The occasion is an exhibit which opened October 6 and continues through January 3. *Special Effects: the Science of Movie and Television Magic* is a big title, but this show justifies every syllable.

Where else under one roof could you see Steve Martin's elongated nose from *Roxanne,* the alien queen from *Aliens,* the fabled Las Vegas miniatures from *One From the Heart,* the flying Winnebago from *Spaceballs,* the California Raisins in person, and matte paintings from *The Birds, Ghostbusters, Return of the Jedi* and *Indiana Jones and the Temple of Doom*? Plus much more from the fields of animation, special makeups, miniatures, computer graphics, conceptual art, and projection processes. It totals up to an immense collection of artifacts, film clips, artwork, and behind-the-scenes photos.

A "living history" section, profusely illustrated with materials from their productions, spotlights four outstanding creators of special visual effects: Rick Baker, John Dykstra, Richard Edlund, ASC, and Syd Mead. Among them, these men have enough Oscars for their contributions to the film industry to start a West Coast branch of Fort Knox.

Edlund, president of Boss Films, Inc., is represented by an in-depth study of the "terror dog" from *Ghostbusters,* tracing its creation from concept to on-screen action. Dykstra, president of Apogee Productions, Inc., shows materials from *Firefox* and *Lifeforce,* including miniature and full-scale work. Makeup artifacts from *American Werewolf in London* and *Greystoke: Tarzan Lord of the Apes* highlight the makeup wizardry of Baker, president of Boris, Inc. (Anyone who names his company after the benign Karloff is a man of taste and perception.) Mead, president of Syd Mead, Inc., provided some of the drawings and paintings he created for *Blade Runner,* one of the most striking visual treats of the Eighties.

This would be a great show at any price within reason, but admission is *free.* The museum is located at Exposition Park (between the L.A. Coliseum and the USC campus) and the show is open between 10 a.m. and 5 p.m. every day except Thanksgiving, Christmas and New Years Day. There are free docent tours (call 213- 744-7438).

Lest some special effects buff should decide to hop a freight from Philadelphia to see this show, please note that after its three-month premiere the exhibition will go on tour. Other cities to be visited include St. Paul, Boston, Columbus, Chicago, Philadelphia, Charlotte and Fort Worth.

—GT

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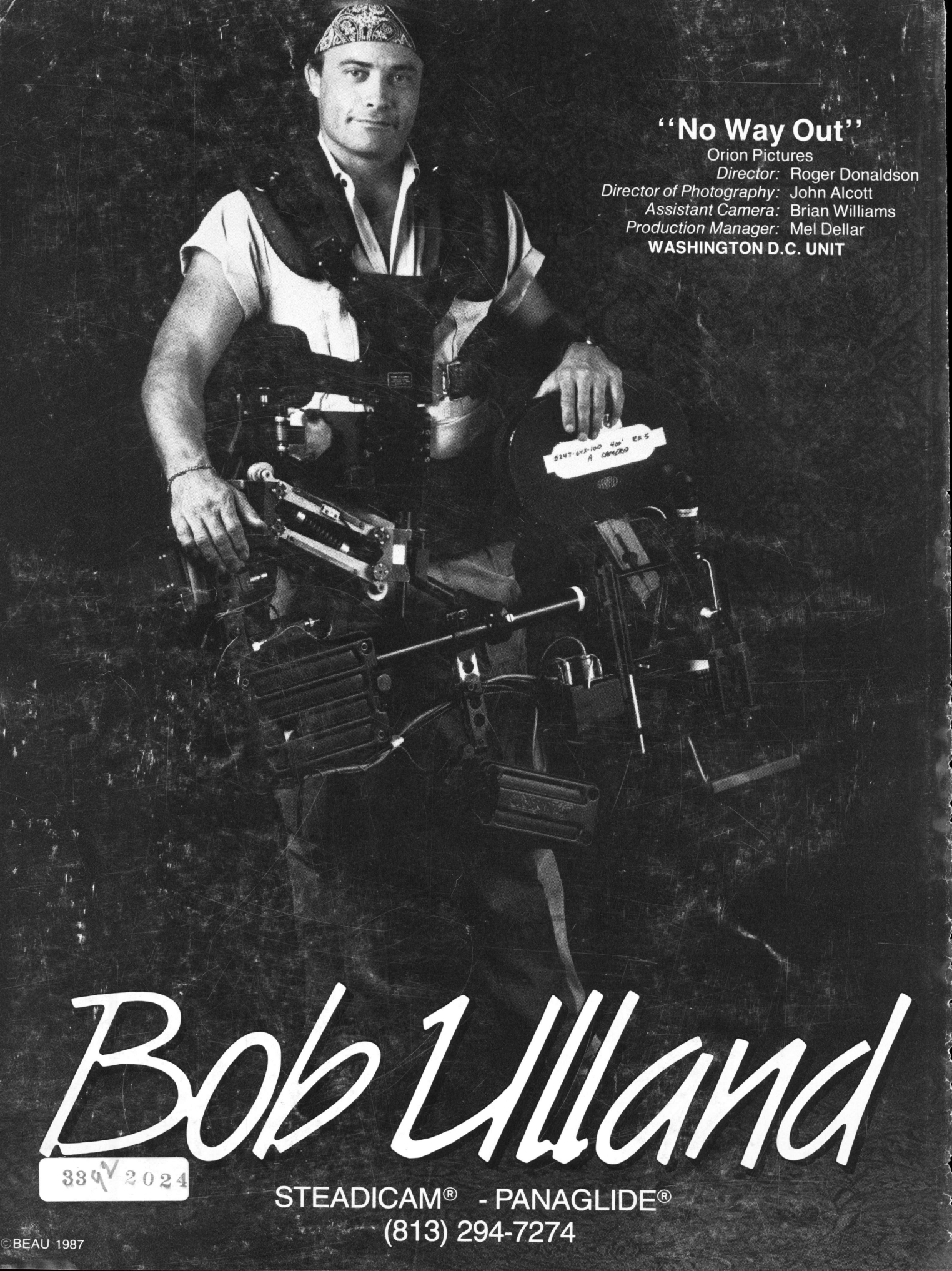

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